MECHANICAL SPECIFICATIONS / SUPPLEMENTAL CONDITIONS

1. BEFORE SUBMITTING A PROPOSAL, THE MECHANICAL CONTRACTOR SHALL VISIT THE SITE OF WORK AND BECOME FAMILIAR WITH ALL SITE CONDITIONS. MECHANICAL CONTRACTOR SHALL CAREFULLY EXAMINE ALL CIVIL, ARCHITECTURAL, STRUCTURAL, PLUMBING, AND ELECTRICAL CONSTRUCTION DOCUMENTS. SUBMISSION OF A BID WILL ACKNOWLEDGE THE MECHANICAL CONTRACTOR HAS VISITED THE SITE AND EXAMINED ALL CONSTRUCTION DOCUMENTS AND BID INSTRUCTIONS. THE MECHANICAL CONTRACTOR'S BID SHALL INCLUDE ALL MECHANICAL WORK IN THE CONSTRUCTION DOCUMENTS, INCLUDING MECHANICAL WORK RELATED TO EQUIPMENT PROVIDED BY OTHERS.

2. MECHANICAL CONTRACTOR SHALL PERFORM WORK IN A SAFE MANNER. COMPLY WITH APPLICABLE OSHA SAFETY GUIDELINES DURING THE COURSE OF COMPLETING THE WORK DESCRIBED ON THESE CONSTRUCTION DOCUMENTS.

3. MECHANICAL CONTRACTOR SHALL REQUEST CLARIFICATION ON ANY ITEM(S) OF THE CONTRACT DOCUMENTS THAT ARE NOT UNDERSTOOD OR WHERE CONFLICTS MAY EXIST. CLARIFICATIONS MUST BE PRESENTED AS A "REQUEST FOR INFORMATION" (RFI) IN WRITING PRIOR TO SUBMITTING A BID. RFI SHALL BE PRESENTED A MINIMUM OF FIVE (5) WORKING DAYS BEFORE THE BID DATE. OBTAIN THE RFI FORM AT https://www.gandwengineering.com/documents. SUBMISSION OF A BID WILL ACKNOWLEDGE THE MECHANICAL CONTRACTOR UNDERSTANDS THE SCOPE OF WORK, MEANS AND METHODS OF INSTALLATION, EQUIPMENT AND MATERIALS TO BE USED. RFI THAT HAVE NOT BEEN CLARIFIED PRIOR TO BID, WILL BE PROVIDED BY THE MECHANICAL CONTRACTOR, AS DIRECTED BY THE ENGINEER OF RECORD, AND THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK SHALL APPLY. NO ADDITIONAL COMPENSATION WILL BE MADE FOR THE FAILURE OF THE CONTRACTOR TO OBTAIN CLARIFICATIONS PRIOR TO BID.

4. THE MECHANICAL CONTRACTOR'S BID SHALL BE BASED ON THE SCHEDULED EQUIPMENT, MATERIALS, AND MANUFACTURERS WHICH FORM THE "BASIS OF DESIGN". ALL OTHER EQUIPMENT, MATERIALS, AND MANUFACTURERS, ARE CONSIDERED SUBSTITUTIONS. CONTRACTOR PROPOSED SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND WITH A COMPLETED SUBSTITUTION REQUEST FORM. OBTAIN THIS FORM AT https://www.gandwengineering.com/documents. APPROVALS OF SUBSTITUTIONS ARE CONTINGENT UPON ENGINEER'S REVIEW. THE MECHANICAL CONTRACTOR SHALL MAKE NO PRIOR ASSUMPTIONS ON SUBSTITUTIONS NOT APPROVED BY THE ENGINEER. IF THE ENGINEER APPROVES A SUBSTITUTION REQUEST, THE MECHANICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR ENGINEERING REVISIONS, PHYSICAL SIZE, CAPACITIES, COORDINATION, SUPPLEMENTAL DRAWINGS AND INFORMING OTHER TRADE CONTRACTORS RELATED TO THE INSTALLATION, AS TO ANY SPECIFIED ITEM CHANGES. THE MECHANICAL CONTRACTOR SHALL BEAR AS PART OF THE MECHANICAL CONTRACTOR'S CONTRACT, ANY ADDITIONAL COSTS INCURRED IN THE MECHANICAL CONTRACTOR'S WORK OR BY THE OTHER CONTRACTORS AS A RESULT OF INSTALLATION FOR OTHER THAN "BASIS OF DESIGN" MATERIALS AND EQUIPMENT.

5. SHOP DRAWINGS SHALL BE SUBMITTED ELECTRONICALLY AS PDF FILES. SHOP DRAWINGS SHALL INCLUDE TRANSMITTAL PAGE(S) INDICATING THE NAME OF THE PROJECT, AND THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL AND MECHANICAL CONTRACTORS. GENERAL CONTRACTOR AND MECHANICAL CONTRACTOR SHALL REVIEW SHOP DRAWING SUBMITTALS FOR COMPLIANCE, CONTENT AND COMPLETENESS AND PROVIDE A STAMP WITH THE DATE OF REVIEW AND SIGNATURE OF THE REVIEWER. TRANSMITTAL PAGE SHALL HAVE INDEX WITH SPECIFICATION SECTION AND DESCRIPTION OF SUBMITTED ITEMS. NO EXCEPTIONS WILL BE TAKEN. SHOP DRAWINGS NOT SUBMITTED IN THIS FORMAT WILL BE REJECTED AND WILL NOT CAUSE REASON FOR PROJECT DELAYS. EQUIPMENT SHALL NOT BE ORDERED UNTIL ENGINEER OF RECORD HAS PROCESSED APPLICABLE SHOP DRAWINGS. A PERIOD OF TEN BUSINESS DAYS WILL BE ALLOWED FOR SUBMITTAL PROCESSING BY THE ENGINEER. REFER TO ARCHITECT'S GENERAL REQUIREMENTS FOR ADDITIONAL REQUIREMENTS. MECHANICAL SUBMITTALS REQUIRED SHALL MINIMALLY INCLUDE THE FOLLOWING:
   a. COORDINATION DRAWINGS, DIMENSIONED AND COORDINATED, PER PARAGRAPH (10) IN THIS SPECIFICATION.
   b. ALL NEW SCHEDULED EQUIPMENT AND ACCESSORIES.
   c. GRILLES, REGISTERS, AND DIFFUSERS.
   d. DAMPERS.
   e. DUCT INSULATION.
   f. PIPE & PIPE INSULATION.
   g. VALVES AND PIPE SPECIALTIES.
   h. BUILDING MANAGEMENT/ TEMPERATURE CONTROL SYSTEM
   i. HVAC TESTING, ADJUSTING, & BALANCING REPORT.

6. THE MECHANICAL CONTRACTOR SHALL HAVE ACCESS TO ELECTRONIC FILES OWNED AND/OR CREATED BY G&W ENGINEERING CORPORATION IN PREPARATION OF CONTRACTOR'S SUBMITTALS OR OTHER APPROVED USE. THE USE OF THESE FILES REQUIRES A SIGNED "ELECTRONIC FILES RELEASE FORM" AGREEING TO ALL TERMS AND CONDITIONS OUTLINED ON THE FORM AND ASSOCIATED DISCLAIMER. THE SIGNED FORM SHALL BE RECEIVED BY G&W ENGINEERING CORPORATION PRIOR TO SHARING ANY ELECTRONIC FILES. IN ACCEPTING, OPENING, COPYING, AND/OR USING ANY TEXT, DATA, DRAWINGS, MODELS, GRAPHICS OR REPORTS IN ANY FORM OF ELECTRONIC MEDIA GENERATED AND TRANSMITTED/FURNISHED BY G&W ENGINEERING CORPORATION ("ELECTRONIC FILES"), THE RECIPIENT AGREES THAT ALL SUCH ELECTRONIC FILES ARE INSTRUMENTS OF SERVICE OF G&W ENGINEERING CORPORATION, WHO SHALL BE DEEMED THE AUTHOR, AND SHALL RETAIN ALL COMMON LAW, STATUTORY LAW AND OTHER RIGHTS, INCLUDING COPYRIGHTS. THE RECIPIENT ALSO AGREES NOT TO TRANSFER THESE ELECTRONIC FILES TO OTHERS WITHOUT THE PRIOR WRITTEN CONSENT OF G&W ENGINEERING CORPORATION. UNLESS OTHERWISE SPECIFIED, SAID ELECTRONIC FILES FURNISHED BY G&W ENGINEERING CORPORATION ARE FURNISHED ONLY FOR CONVENIENCE, NOT RELIANCE BY THE RECEIVING PARTY; ANY CONCLUSION OR INFORMATION OBTAINED OR DERIVED FROM SUCH ELECTRONIC FILES WILL BE AT THE USER'S SOLE RISK. UNLESS OTHERWISE SPECIFIED, G&W ENGINEERING CORPORATION MAKES NO WARRANTIES, EITHER EXPRESSED OR IMPLIED, OF CORRECTNESS AND FITNESS FOR USE FOR ANY PARTICULAR PURPOSE OF SAID ELECTRONIC FILES. THE ELECTRONIC FILES SHALL NOT BE USED BY THE RECIPIENT FOR FUTURE ADDITIONS OR ALTERATIONS TO THIS PROJECT OR FOR OTHER PROJECTS, WITHOUT THE PRIOR WRITTEN CONSENT OF G&W ENGINEERING CORPORATION. ANY UNAUTHORIZED USE OF THE ELECTRONIC FILES SHALL BE AT THE RECIPIENT'S SOLE RISK AND WITHOUT LIABILITY TO G&W ENGINEERING CORPORATION AND ITS CONSULTANTS. IN NO EVENT SHALL G&W ENGINEERING CORPORATION BE LIABLE FOR DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES AS A RESULT OF THE RECIPIENT'S UNAUTHORIZED USE OR REUSE OF SAID ELECTRONIC FILES. G&W ENGINEERING CORPORATION SHALL RETAIN AN OWNERSHIP AND PROPERTY INTEREST THEREIN (INCLUDING THE RIGHT TO REUSE AT ITS SOLE DISCRETION) WHETHER OR NOT THE PROJECT FOR WHICH SAID ELECTRONIC FILES ARE PREPARED IS COMPLETED. G&W ENGINEERING CORPORATION SHALL BE HELD HARMLESS AGAINST ALL DAMAGES, LIABILITIES OR COSTS, INCLUDING REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR RESULTING FROM RECIPIENT'S UNAUTHORIZED USE OR REUSE OF THESE ELECTRONIC FILES.

7. SUBMIT AND PAY FOR ALL REQUIRED WORK PERMITS. PROVIDE ALL REQUIRED INSPECTIONS AND RE-INSPECTIONS. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE PROJECT COMPLETION.

8. ALL EQUIPMENT AND MATERIALS SHALL BE SPECIFICALLY PROVIDED PER WRITTEN INSTALLATION INSTRUCTIONS AS PUBLISHED BY THE MANUFACTURER OF THE EQUIPMENT OR MATERIAL PROVIDER. MEANS AND METHODS OF INSTALLATION ARE TO BE UNDERSTOOD BY THE MECHANICAL CONTRACTOR. THE MECHANICAL CONTRACTOR SHALL OBTAIN THE INSTALLATION INSTRUCTIONS AND REQUIREMENTS PRIOR TO BID. ALL RFI AND CLARIFICATIONS OF SCOPE DURING CONSTRUCTION WHERE THE CONTRACTOR HAS NOT PREVIOUSLY OBTAINED THIS INFORMATION FOR BIDDING PURPOSES WILL NOT BE CAUSE FOR ADDITIONAL COSTS OR CONSTRUCTION DELAY.

9. THE MECHANICAL SCOPE OF WORK SHALL BE PROVIDED TO COMPLY WITH THE ADOPTED EDITION OF THE INTERNATIONAL MECHANICAL CODE, LOCAL ORDINANCES, STATE LAW, AND FEDERAL LAW. REFER TO THE ARCHITECTURAL CODE BLOCK OR THE MUNICIPALITY WEBSITE FOR THE APPLICABLE CODES AND ADOPTED ORDINANCES PRIOR TO BID. SUBMISSION OF A BID ACKNOWLEDGES THE MECHANICAL CONTRACTOR HAS PERFORMED THIS REQUIREMENT AND THE BID INCLUDES LABOR AND MATERIAL TO PROVIDE CODE COMPLIANCE. SEISMIC RESTRAINTS AND ANCHORAGE SHALL BE PROVIDED TO COMPLY WITH THE 2015 INTERNATIONAL BUILDING CODE. PROVIDE ENGINEERED SEISMIC RESTRAINT DETAILS SIGNED AND SEALED BY A MISSOURI LICENSED ENGINEER. SUBMIT FOR REVIEW BY ENGINEER OF RECORD.

10. MECHANICAL CONTRACTOR SHALL PROVIDE FIELD COORDINATION WITH OTHER TRADES; SYSTEMS AS SHOWN ARE DIAGRAMMATIC AND GIVE THE GENERAL ARRANGEMENT AND LOCATIONS ONLY. MECHANICAL CONTRACTOR SHALL COMPLETELY REVIEW ARCHITECTURAL DRAWINGS, STRUCTURAL DRAWINGS, CEILING ELEVATIONS, AND SYSTEM DRAWINGS OF OTHER TRADES FOR DETAILS OF CONSTRUCTION. ROUGH-IN OF MECHANICAL DEVICES, AIR TERMINALS, EQUIPMENT, PIPING, ATTACHMENTS, AND HANGERS SHALL BE BASED ON THIS REVIEW. EXACT LOCATIONS AND FINAL LAYOUT SHALL BE DETERMINED IN THE FIELD, PROVIDE ALL NECESSARY EQUIPMENT, DUCT TRANSITIONS, PIPE TRANSITIONS, FITTINGS, HANGERS, SUPPORTS, AND OFFSETS REQUIRED FOR A COMPLETE INSTALLATION IN ALL RESPECTS. THE MECHANICAL CONTRACTOR MEANS AND METHODS OF INSTALLATION SHALL PROVIDE FOR OPERATING EFFICIENCY, NEATNESS OF APPEARANCE, AND EASE OF MAINTENANCE. THE MECHANICAL CONTRACTOR SHALL PREPARE DIMENSIONED FIELD ERECTION DRAWINGS FOR USE BY THE INSTALLERS TO ENSURE PROPER INSTALLATION, CLEARANCES, AND COORDINATION WITH STRUCTURAL MEMBERS, ARCHITECTURAL WORK, AND ALL OTHER ITEMS BEING INSTALLED BY OTHER TRADE CONTRACTORS. THE MECHANICAL CONTRACTOR SHALL TAKE THEIR OWN MEASUREMENTS AT THE SITE AND BUILDING, AND BE RESPONSIBLE FOR THE CORRECT LAYOUT, INTERPRETATION, AND USE OF ALL SIZES AND DIMENSIONS. THE CONTRACTOR SHALL KEEP "AS-BUILT" INFORMATION DURING CONSTRUCTION AND FURNISH TO THE OWNER OR TENANT A RECORD SET OF LEGIBLE BLACK LINE PRINTS AND AN ELECTRONIC COPY OF THESE DOCUMENTS AT PROJECT COMPLETION.

11. REVIEW ARCHITECTURAL DRAWINGS FOR ALL FIRE RATINGS AND FIRE RATED ASSEMBLIES PRIOR TO BIDDING THE PROJECT. PROVIDE FIRE STOP AT EACH RATED WALL, FLOOR, CEILING-ROOF ASSEMBLY PENETRATION. FIRE STOP SYSTEMS SHALL BE MANUFACTURED BY "3M". PROVIDE IN STRICT COMPLIANCE WITH THE MANUFACTURER'S APPLICATION DETAILS AND INSTRUCTIONS. PROVIDE TAGGED CERTIFICATIONS AT EACH PENETRATION. PROVIDE SHOP DRAWINGS FOR REVIEW WITH THE U.L. LISTING AND TEST CRITERIA. PROVIDE FIRE STOPPING WHERE REQUIRED BY THE AUTHORITY HAVING JURISDICTION. EQUAL SYSTEMS AS MANUFACTURED BY "SPEC SEAL" OR "HILTI" WILL BE ACCEPTABLE.

12. PROVIDE DUCT, PIPING, AND HANGER PENETRATIONS OF NON-RATED ASSEMBLIES WITH DRAFT STOPPING, OR SMOKE BARRIER SEALANT SYSTEMS. THROUGH PENETRATION SEALANT SYSTEMS SHALL BE MANUFACTURED BY "3M". APPLY IN STRICT COMPLIANCE WITH THE MANUFACTURER'S APPLICATION DETAILS AND INSTRUCTIONS. PROVIDE DRAFT STOPPING OR SMOKE BARRIER SEALANTS TO MEET APPROVAL OF THE AUTHORITY HAVING JURISDICTION. EQUAL SYSTEMS AS MANUFACTURED BY "SPEC SEAL" OR "HILTI" WILL BE ACCEPTABLE.

13. THE MECHANICAL CONTRACTOR SHALL GUARANTEE ALL LABOR, EQUIPMENT AND MATERIAL INSTALLED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE AND SHALL REPAIR OR REPLACE WITHOUT COST TO THE OWNER ANY EQUIPMENT WHICH IS DEFECTIVE OR IMPROPERLY INSTALLED. IN ADDITION, THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGE TO THE BUILDING AND ITS CONTENTS OR OTHER EQUIPMENT CAUSED BY DEFECTS OR IMPROPER INSTALLATION OF EQUIPMENT OR MATERIALS INSTALLED UNDER THIS SECTION OF THE WORK.

14. MECHANICAL CONTRACTOR SHALL CUT AND PATCH ROOF, FLOORS, WALLS, AND CEILINGS WHERE REQUIRED TO INSTALL NEW MECHANICAL EQUIPMENT, DUCT, AND/OR PIPING SYSTEMS. SURFACES SHALL BE PATCHED AND LEFT READY FOR FINAL SCHEDULED FINISH. ROOFING REPAIRS SHALL BE PERFORMED BY A QUALIFIED ROOFING CONTRACTOR THAT MAINTAINS THE ROOF WARRANTY AT THE MECHANICAL CONTRACTOR'S EXPENSE. ALL ROOFING WORK SHALL BE INCLUDED IN THE MECHANICAL CONTRACTOR'S BID.

15. FABRICATE AND INSTALL GALVANIZED SHEET METAL DUCTWORK FOR VELOCITIES LESS THAN 2000 FEET PER MINUTE AND STATIC PRESSURES LESS THAN 2" WATER GAUGE IN ACCORDANCE WITH THE LATEST EDITION OF THE "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" AS PUBLISHED BY THE SMACNA. PROVIDE ELBOWS, BRANCHES AND TEES IN SUPPLY AND RETURN DUCTS WITH TURNING VANES PER SMACNA STANDARDS. SPIRAL EXPOSED DUCT, TO BE PAINTED, SHALL HAVE PAINT GRIP FINISH. INSULATED FLEXIBLE DUCT SHALL BE "THERMAFLEX" TYPE M-KE, MAXIMUM 8'-0" LONG, MINIMUM INSULATION OF R-4.2. IN CLIMATE ZONES 2-7, R-6 INSULATION SHALL BE USED IN ANY AREA BELOW AN UNINSULATED ROOF ABOVE AN INSULATED CEILING. DUCT SIZES INDICATED ARE SHEET METAL DIMENSIONS AND, IF DUCT LINER IS INDICATED, INCLUDE LINER. UNLESS NOTED OTHERWISE, DUCTWORK WITHOUT AN INSULATION TAG IS NOT LINED OR EXTERNALLY INSULATED.

16. THE MECHANICAL CONTRACTOR SHALL PROTECT ALL OPEN DUCT, PIPING, AND MECHANICAL EQUIPMENT FROM CONSTRUCTION DUST AND DIRT. FOR MECHANICAL SYSTEMS OPERATED DURING CONSTRUCTION, PROTECT EACH RETURN AIR DUCT OPENING WITH MERV 8 FILTERS AND INSTALL MERV 8 FILTER(S) IN EQUIPMENT FILTER RACK. PRIOR TO TESTING AND BALANCING, REMOVE FILTERS AND INSTALL NEW MERV 8 FILTERS. AT COMPLETION OF CONSTRUCTION, REMOVE CONSTRUCTION FILTERS AND REPLACE EQUIPMENT FILTERS WITH NEW FILTERS.

17. ALL JOINTS AND SEAMS OF NEW DUCT SHALL BE CLEANED AND SEALED. SEAL NEW DUCTS TO THE FOLLOWING SEAL CLASSES ACCORDING TO SMACNA "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE": SEAL DUCTS WITH "FOSTER" 32-14 SEALANT PER MANUFACTURES INSTALLATION INSTRUCTIONS FOR ALL JOINTS IN LOW AND MEDIUM VELOCITY DUCT.
   - CONDITIONED SPACE, SUPPLY-AIR DUCTS IN PRESSURE CLASS 2-INCH W.G. AND LOWER; SEAL CLASS C.
   - CONDITIONED SPACE, EXHAUST DUCTS: SEAL CLASS B.
   - CONDITIONED SPACE, RETURN-AIR DUCTS: SEAL CLASS C.

18. TEST AND ADJUST ALL AIR HANDLING EQUIPMENT, TERMINALS, AND AIR DEVICES TO PROVIDE THE REQUIRED AIR VOLUME AGAINST THE AVAILABLE SYSTEM STATIC PRESSURE. TEST AND SET ALL DAMPERS, SUPPLY, RETURN, OUTDOOR AIR AND EXHAUST DEVICES TO THE CFM SHOWN ON THE DRAWINGS. PROVIDE ALL REQUIRED SHEAVE AND BELT MODIFICATIONS REQUIRED TO OBTAIN CFM QUANTITIES SHOWN ON THE DRAWINGS. TESTING AND BALANCING SHALL BE IN ACCORDANCE WITH PROCEDURES OUTLINED IN TESTING AND BALANCING MANUAL AS PUBLISHED BY SMACNA. PROVIDE A TEST AND BALANCE REPORT PERFORMED AND PREPARED BY AN INDEPENDENT TESTING AND BALANCING CONTRACTOR CERTIFIED AABC OR NEBB. PROVIDE AN ELECTRONIC COPY OF THE TESTING AND BALANCING REPORT, INCLUDING A MARKED UP PLAN, FOR REVIEW BY THE ENGINEER.

19. MECHANICAL CONTRACTOR SHALL PROVIDE MATERIAL, FITTINGS, DUCTS, AND LABOR TO LOCATE ALL AIR INTAKES A MINIMUM OF 10'-0" FROM ANY EXHAUST DEVICE OR PLUMBING VENT. COORDINATE WITH OTHER TRADE CONTRACTORS ON THE PROJECT AND ANY EXISTING CONDITIONS PRIOR TO THE START OF CONSTRUCTION.

20. INSTALL PIPE SLEEVES FOR PIPES PENETRATING FLOORS, PARTITIONS, ROOFS, AND WALLS, EXCEPT CORE DRILLED CONCRETE. INSTALL SLEEVES IN CONCRETE FLOORS, CONCRETE ROOF SLABS, AND CONCRETE WALLS AS NEW SLABS AND WALLS ARE CONSTRUCTED.

21. MATERIALS IN DUCTS AND PLENUMS: ALL MATERIALS INSTALLED IN DUCTS AND PLENUMS SHALL BE LABELED AND BE NONCOMBUSTIBLE OR HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR UL 723. COPPER PIPING OR SCHEDULE 40 STEEL PIPE IS REQUIRED ABOVE CEILINGS OR IN CAVITIES USED AS RETURN AIR PLENUM; NO PVC PIPING WILL BE ALLOWED IN RETURN AIR PLENUM SPACES. REFER TO MECHANICAL FLOOR PLAN TO DETERMINE RETURN AIR PLENUM LOCATIONS.

22. CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELDED JOINTS. PIPING SHALL BE PITCHED IN THE DIRECTION OF FLOW WITH A PITCH OF 1" IN 8'.

23. NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL, ASTM A120 WITH 150 LB. WELDED FITTINGS IN SEISMICALLY ACTIVE AREAS PER THE 2015 IBC. TYPE L COPPER MAY BE USED WITH BRAZED FITTINGS. ALL COPPER OR STEEL FITTINGS SHALL BE BRAZED OR WELDED IN RETURN AIR PLENUMS AND INACCESSIBLE LOCATIONS. NATURAL GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL, ASTM A120 WITH APPROVED FITTINGS IN NON-SEISMIC AREAS. ALL STEEL PIPING EXPOSED TO THE ELEMENTS SHALL BE PAINTED WITH RUST INHIBITIVE PAINT BY THE MECHANICAL CONTRACTOR. PROVIDE GAS COCK, UNION, AND DIRT LEG AT EACH EQUIPMENT CONNECTION. PROVIDE GAS PRESSURE REGULATORS, AS REQUIRED, TO REDUCE GAS PRESSURE FROM 2 PSI TO 7-12 INCHES WATER COLUMN. PROVIDE RELIEF VENT PIPING FROM ALL PRV TO THE EXTERIOR ATMOSPHERE BASED ON THE EQUIPMENT SUPPLIERS INSTALLATION INSTRUCTIONS.

24. PROVIDE EXHAUST FANS AS SCHEDULED AND SPECIFIED. CEILING MOUNTED FANS SHALL BE UL LISTED, COMPLETE WITH 22 GAUGE GALVANIZED STEEL INLET BOX, INJECTION MOLDED RESIN FAN HOUSING, GRAVITY BACK DRAFT DAMPER, FACTORY ELECTRICAL DISCONNECT, DIRECT DRIVE, O.D.P. PERMANENTLY LUBRICATED MOTOR WITH VIBRATION ISOLATION, WHITE PLASTIC(ALUMINUM) GRILLE.

25. PROVIDE SCHEDULE 40 PVC FLUE SYSTEM/COMBUSTION AIR PIPING PER THE EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS. PROVIDE CONCENTRIC WALL TERMINATION KITS WHERE INDICATED ON THE DRAWINGS.

26. MECHANICAL CONTRACTOR SHALL PROVIDE ALL TEMPERATURE CONTROL WIRING, INCLUSIVE OF ALL VOLTAGES, NO EXCEPTIONS OR EXCLUSIONS. ALL COMPONENTS SHALL BE NEW UNLESS NOTED OTHERWISE. ALL THERMOSTATS SHALL BE NEW, EQUAL TO HONEYWELL T7351F UNLESS NOTED OTHERWISE. TYPICAL SPACE THERMOSTAT MOUNTING HEIGHT SHALL BE 48" A.F.F. COORDINATE ACTUAL THERMOSTAT MOUNTING WITH FINAL ARCHITECTURAL FLOOR AND FURNITURE PLANS. DO NOT MOUNT THERMOSTATS IN DIRECT SUNLIGHT, NEAR HEAT SOURCES, OR ON EXTERIOR WALLS. IF THERMOSTAT MUST BE MOUNTED ON AN EXTERIOR WALL, PROVIDE INSULATED MOUNTING BASE. ALL SYSTEMS SHALL BE COMPLETE INCLUDING, BUT NOT LIMITED TO: EXPERTISE, DESIGN, EQUIPMENT, CABINETS, BOXES, RELAYS, SWITCHES, CONTACTORS, TRANSFORMERS, WIRING, RACEWAYS, AND ELECTRICAL ACCESSORIES. WIRING EXPOSED IN RETURN AIR PLENUM SHALL BE PLENUM RATED CABLE. PROVIDE SHOP DRAWINGS FOR REVIEW AND PROCESSING. THE SHOP DRAWINGS SHALL CONTAIN A FLOOR PLAN WITH THERMOSTAT LOCATIONS, CONTROL SEQUENCE STATEMENT, AND WIRING DIAGRAM WITH ALL PARTS INDICATED OR A BILL OF MATERIAL. ALL COSTS ASSOCIATED WITH HARDWARE, SOFTWARE, GRAPHICS, AND TIME TO FULLY INTEGRATE THIS NEW EQUIPMENT INTO THE BUILDING STANDARD BAS SHALL BE INCLUDED IN THIS BID.

27. CEILING MOUNTED EXHAUST FANS SHALL BE INTERLOCKED WITH THE LOCAL LIGHTING CIRCUIT.

28. THE LANDLORD'S CONSTRUCTION CRITERIA, LEASE AGREEMENT, AND CONSTRUCTION STANDARDS ARE HERE-IN MADE PART OF THIS CONTRACT. ALL REQUIREMENTS IN THE LANDLORDS CONSTRUCTION CRITERIA, LEASE AGREEMENT, AND CONSTRUCTION STANDARDS REFERRED TO AS TENANT WORK AND DEFINED AS MECHANICAL WORK SHALL BE PROVIDED BY THE CONTRACTOR. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO OBTAIN COPIES OF THESE DOCUMENTS AND COMPLETELY FAMILIARIZE THEMSELVES WITH THESE DOCUMENTS PRIOR TO BIDDING THIS PROJECT. SUBMISSION OF A BID ACKNOWLEDGES THE MECHANICAL CONTRACTOR HAS COMPLIED WITH THIS REQUIREMENT OF THE CONTRACT.

29. THE KITCHEN EQUIPMENT DRAWINGS, HOOD EQUIPMENT DRAWINGS, AND MANUFACTURERS ENGINEERING TECHNICAL SHEETS ARE MADE PART OF THIS CONTRACT. ALL MECHANICAL REQUIREMENTS ON THE KITCHEN EQUIPMENT AND EXHAUST HOOD SYSTEM DRAWINGS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR AS IT RELATES TO THIS DIVISION. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO OBTAIN COPIES OF THESE DOCUMENTS AND COMPLETELY FAMILIARIZE THEMSELVES WITH THESE DOCUMENTS PRIOR TO BIDDING THIS PROJECT. SUBMISSION OF A BID ACKNOWLEDGES THE MECHANICAL WORK CONTRACTOR HAS REVIEWED ALL KITCHEN EQUIPMENT AND HOOD INFORMATION, AND THE BID INCLUDES ALL EQUIPMENT, EXPERTISE, RIGGING, TESTING, AND LABOR NECESSARY TO COMPLETE INSTALLATION OF THE KITCHEN EQUIPMENT AND HOOD SYSTEMS. WHEN MECHANICAL DRAWINGS AND KITCHEN EQUIPMENT DRAWINGS CONFLICT, THE MOST STRINGENT REQUIREMENTS APPLY AND THIS CONTRACTOR SHALL REQUEST CLARIFICATION PRIOR TO BID OR STARTING WORK. EXPOSED UTILITY SERVICE LINES AND PIPES SHALL BE INSTALLED IN A WAY THAT DOES NOT OBSTRUCT OR PREVENT CLEANING OF THE FLOOR OR WALLS OR INTERIORS OF CABINETS. ALL PIPING AND CONDUIT IS REQUIRED TO BE HELD 6" OFF THE FLOOR AND 1" AWAY FROM THE WALLS. EXPOSED ARMOR CABLE OR FLEXIBLE GAS PIPING SYSTEMS ARE NOT ACCEPTABLE AT THE INTERIOR OF CABINETS.

30. UPON SUBSTANTIAL COMPLETION OF THE PROJECT AND PRIOR TO MECHANICAL CONTRACTOR'S REQUEST FOR FINAL INSPECTION, THE CONTRACTOR SHALL FURNISH TO THE GENERAL CONTRACTOR FOR REVIEW, ONE (1) SET OF OPERATION AND MAINTENANCE MANUALS, IN A 3-RING HARD-BACK BINDER AND ELECTRONICALLY, ON TWO (2) THUMB DRIVE MEMORY USB STICKS. O&M MANUALS SHALL MINIMALLY INCLUDE THE FOLLOWING:
   a. INSTALLATION, STARTUP NORMAL SHUTDOWN, EMERGENCY SHUTDOWN, MANUAL OPERATION AND NORMAL AND EMERGENCY OPERATION PROCEDURES, INCLUDING ANY SPECIAL LIMITATIONS, FOR EACH MAJOR PIECE OF EQUIPMENT.
   b. SEQUENCE OF OPERATION AND OPERATING INSTRUCTIONS OUTLINING THE SAFE AND EFFICIENT OPERATION OF EACH MAJOR PIECE OF EQUIPMENT.
   c. EQUIPMENT LIST OF EACH MAJOR PIECE OF EQUIPMENT INCLUDING THE LOCATION, MAKE, MODEL, SERIAL NUMBER (IF APPLICABLE), VOLTAGE, PHASE, # WIRES, AMPACITY AND ALL OTHER INDUSTRY STANDARD NAMEPLATE DATA.
   d. SERVICE INSTRUCTIONS OUTLINING THE RECOMMENDED SPARE PARTS, ALONG WITH THE CONTACT INFORMATION FOR THE LOCAL SUPPLIER AND/OR FACTORY REPRESENTATIVE(S), AND RECOMMENDED PREVENTATIVE AND CORRECTIVE MAINTENANCE, WITH SERVICE PROCEDURES AND SCHEDULES OF EACH MAJOR PIECE OF EQUIPMENT.
   e. SERVICE CONTRACTS ISSUED.
   f. THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE MANUFACTURER AND INSTALLING CONTRACTOR AND THE 24-HOUR NUMBER FOR EMERGENCY SERVICE FOR ALL EQUIPMENT IN THIS SECTION, IDENTIFIED BY EQUIPMENT.
   g. COPIES OF REVIEWED/APPROVED SUBMITTAL DATA, CUT SHEETS, DATA BASE SHEETS AND APPROPRIATE SHOP DRAWINGS. IF SUBMITTAL WAS NOT REQUIRED FOR APPROVAL, DESCRIPTIVE PRODUCT DATA SHALL BE INCLUDED.
   h. AS-BUILT/RECORD DRAWINGS AND DOCUMENTATION.
   i. GUARANTEES/WARRANTIES.
   j. INSPECTION CARDS AND APPROVALS.
   k. NAME OF OWNER, ARCHITECT, ENGINEER OF RECORD, CONTRACTOR AND ALL SUB-CONTRACTORS.

MECHANICAL PIPING SYMBOLS

- AUTOMATIC AIR VENT (AAV)
- AUTOMATIC FLOW CONTROL VALVE
- AUTOMATIC TEMPERATURE CONTROL VALVE (3-WAY)
- AUTOMATIC TEMPERATURE CONTROL VALVE (2-WAY)
- PRESSURE RELIEF VALVE
- BALL VALVE (BV)
- CHECK VALVE (CV)
- CIRCUIT SETTER (CS)
- COMPRESSED AIR QUICK-CONNECT
- CONCENTRIC PIPE REDUCER
- ECCENTRIC PIPE REDUCER
- EMERGENCY GAS SHUT-OFF VALVE
- FLEXIBLE PIPE CONNECTION
- GAS SHUT-OFF VALVE (SOV)
- GATE VALVE (GT. V.)
- GEAR OPERATED BUTTERFLY VALVE
- GLOBE VALVE (GL. V.)
- HOSE END VALVE
- MANUAL AIR VENT (MAV)
- PETE'S PLUG (TEMPERATURE & PRESSURE PORT)
- PLUG VALVE
- PRESSURE GAUGE
- PRESSURE REDUCING VALVE (PRV)
- STRAINER (STR)
- STRAINER WITH BLOWDOWN
- THERMOMETER
- TRIPLE DUTY VALVE (TDV)
- VALVE IN RISER
- WATER METER

MECHANICAL SYMBOL LIST

- SUPPLY AIR DUCT UP
- SUPPLY AIR DUCT DOWN
- RETURN AIR DUCT UP
- RETURN AIR DUCT DOWN
- EXHAUST AIR DUCT UP
- EXHAUST AIR DUCT DOWN
- CHANGE IN DUCT SIZE
- TURNING VANES
- FLEXIBLE DUCT CONNECTION
- HORIZONTAL LIFE SAFETY DAMPER
- VERTICAL LIFE SAFETY DAMPER
- MOTORIZED AUTOMATIC DAMPER (MAD)
- MANUAL DAMPER
- CARBON DIOXIDE DETECTOR
- CARBON MONOXIDE DETECTOR
- HUMIDISTAT
- MANOMETER
- PRESSURE SWITCH
- RETURN AIR SMOKE DETECTOR
- REFRIGERANT (Rxxx) DETECTOR
- REFRIGERANT LEAK HORN-STROBE
- THERMOSTAT
- PIPE/DUCT IN ATTIC
- PIPE/DUCT BELOW FLOOR OR GRADE
- PIPE/DUCT ABOVE CEILING
- EXPOSED DUCT, W/ MILL PHOSPHATIZED FINISH
- PIPE/DUCT ON ROOF
- NEW CONNECTION TO EXISTING (VERIFY SIZE AND LOCATION IN FIELD PRIOR TO BID)
- NEW BRANCH DUCT TAP & CONNECTION TO EXISTING
- DUCT INSULATION (SEE SCHEDULE)
- PLAN NOTE SYMBOL
- REVISION SYMBOL
- EQUIPMENT CALLOUT (SEE SCHEDULE)
- GRILLE/DIFFUSER CALLOUT (SEE SCHEDULE)
- LIFE SAFETY DAMPER CALLOUT (SEE SCHEDULE)
- EXISTING DUCT TO REMAIN
- EXISTING TO BE DEMOLISHED

MECHANICAL PIPING

——A——	COMPRESSED AIR LINE
——CD——	CONDENSATE DRAIN
- - -CD- - -	CONDENSATE DRAIN BELOW FLOOR OR GRADE
- - -CR- - -	CONDENSER WATER RETURN
——CS——	CONDENSER WATER SUPPLY
- - -CHR- - -	CHILLED & HOT WATER RETURN
——CHS——	CHILLED & HOT WATER SUPPLY
- - -CWR- - -	CHILLED WATER RETURN
——CWS——	CHILLED WATER SUPPLY
——D——	DRAIN LINE
——G——	GAS LINE
——HG——	HOT GAS LINE
- -HPWR- -	HEAT PUMP WATER RETURN
——HPWS——	HEAT PUMP WATER SUPPLY
- - -HPC- - -	HIGH PRESSURE CONDENSATE
- - -HWR- - -	HOT WATER RETURN
——HPS——	HIGH PRESSURE STEAM
——HWS——	HOT WATER SUPPLY
- - -LPC- - -	LOW PRESSURE CONDENSATE
——LPG——	LIQUIFIED PETROLEUM GAS (PROPANE)
——LPS——	LOW PRESSURE STEAM
- - -MPC- - -	MEDIUM PRESSURE CONDENSATE
——MPS——	MEDIUM PRESSURE STEAM
——MUW——	MAKE-UP WATER
——RL——	REFRIGERANT LIQUID LINE
——RS——	REFRIGERANT SUCTION LINE
-XX- TYPE -XX-	EXISTING PIPE TO BE REMOVED
-//- TYPE -//-	EXISTING PIPE TO BE REMOVED
—TYPE (E)—	EXISTING PIPING

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
A.I.P.	ABANDON IN PLACE
AL	ALUMINUM
ALT	ALTERNATE
AP	ACCESS PANEL
AS	AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROL VALVE
ATR	ALL THREAD ROD
ATU	AIR TERMINAL UNIT
AV	MANUAL AIR VENT
BB	BASEBOARD HEATER
BDD	BACK DRAFT DAMPER
BES	BANKING EQUIPMENT SUPPLIER
BFF	BELOW FINISHED FLOOR
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOE	BOTTOM OF EQUIPMENT
BOP	BOTTOM OF PIPE
BS	BRANCH SELECTOR - DAIKIN
CH	CHILLER
CLG	CEILING
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CR	CONDENSER WATER RETURN
CRAC	COMPUTER ROOM AIR CONDITIONER
CRCU	COMPUTER ROOM CONDENSING UNIT
CS	CONDENSER WATER SUPPLY
CSST	CORRUGATED STAINLESS STEEL TUBING
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
DDC	DIRECT DIGITAL CONTROL
DIFF	DIFFUSER
DISC	DISCONNECT
DLSS	DUCTLESS SPLIT SYSTEM
DN	DOWN
DPS	DIFFERENTIAL PRESSURE SWITCH
(E)	EXISTING
EA	EXHAUST AIR
EBB	ELECTRIC BASE BOARD
EC	ELECTRICAL WORK CONTRACTOR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EMS	ENERGY MANAGEMENT SYSTEM
EQPT	EQUIPMENT
ER	EXHAUST REGISTER
ERV	ENERGY RECOVERY VENTILATOR
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXH	EXHAUST
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FC	FLEX CONNECTION
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FPC	FIRE PROTECTION CONTRACTOR
FRT	FIRE-RETARDANT-TREATED
FSC	FOOD SERVICE CONSULTANT
FSD	FIRE/SMOKE DAMPER
FSEC	FOOD SERVICE EQPT. CONTRACTOR
FTU	FAN TERMINAL UNIT
FV	FIELD VERIFY
GC	GENERAL WORK CONTRACTOR
GF	GAS FURNACE
GWH	GAS WATER HEATER
HP	HEAT PUMP
HP	HORSEPOWER
HRCU	HEAT RECOVERY CONDENSING UNIT
HWCP	HOT WATER CIRC. PUMP
HX	HEAT EXCHANGER
IAH	INTAKE AIR HOOD
IOM	INSTALLATION & OPERATION MANUAL
ID	INSIDE DIAMETER
IR	INFRA-RED TUBE HEATER (GAS)
IV	INTAKE VENTILATOR
KEF	KITCHEN EXHAUST FAN
LLSV	LIQUID LINE SOLENOID VALVE
LV	LOUVER
LPG	LIQUIFIED PETROLEUM GAS (PROPANE)
MAX	MAXIMUM
MC	MECHANICAL WORK CONTRACTOR
MCA	MINIMUM CIRCUIT AMPERES
MCC	MOTOR CONTROL CENTER
MD	MANUAL DAMPER
MIN	MINIMUM
MH	MOUNTING HEIGHT
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE-UP AIR
MUW	MAKE UP WATER
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
OA	OUTDOOR AIR
OD	OUTSIDE DIAMETER
OX	OXYGEN
PC	PLUMBING WORK CONTRACTOR
PCF	POUNDS/CUBIC FOOT
PSG	PUMP SUCTION GUIDE
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RAH	RELIEF AIR HOOD
RF	RETURN FAN
RG	RETURN GRILLE
RL	EXISTING DEVICE RELOCATED
RR	RETURN REGISTER
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	ROOF TOP UNIT
RV	RELIEF VENTILATOR
SA	SUPPLY AIR
SD	SPLITTER DAMPER
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SMS	SHEET METAL SCREW
SS	STAINLESS STEEL
SSF	SIDE STREAM FILTER
TA	TRANSFER AIR
TEMP	TEMPORARY
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TXV	THERMAL EXPANSION VALVE
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UNV	UNIVERSAL
UTR	UP THROUGH ROOF
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VRV	VARIABLE REFRIGERANT VOLUME
VSD	VARIABLE SPEED DRIVE
W/	WITH
WP	WEATHERPROOF
WSHP	WATER SOURCE HEAT PUMP
XFMR	TRANSFORMER

LAYNECO CONSTRUCTION SERVICES
1027 COOL SPRINGS INDUSTRIAL DRIVE
O'FALLON, MO 63366
(636) 294-6245

G&W ENGINEERING
138 Weldon Parkway, St. Louis, MO 63043
(314) 469-3737
Project Number: 2020-0110.00
www.GandWengineering.com
Missouri State Certificate of Authority # 2002018767

A PROJECT FOR:
IMO'S PIZZA - ST. PETERS
MID RIVERS MALL DRIVE
ST. PETERS, MO 63376

SEAL
STATE OF MISSOURI
KEVIN S. GRIESEMER
NUMBER PE-23628
PROFESSIONAL ENGINEER

REVISIONS

JOB NO:	2020-0110.00
DRAWN BY:	ASB/JRD/BR
CHECKED BY:	K.S.G.
DATE:	02-28-2020

SHEET NO.
M1.0
MECHANICAL TITLE SHEET

AIR CURTAIN SCHEDULE

* POWERED AIRE

PLAN MARK	MODEL NUMBER *	CFM	VELOCITY (FPM)	TEMP RISE (°F)	DECIBELS	HP (WATT)	HEAT (KW)	LENGTH (INCHES)	VOLTS/PH /HZ	WEIGHT (LBS)	NOTES
AC-1	CHA-1-36E	1197	2443	26.7	63	3/4	10.0	36.0	208/1/60	182	1

NOTES: 1. FURNISH FAN WITH FACTORY MOUNTED PRE-WIRED DISCONNECT SWITCH, REMOTE MOUNTED DECORATOR SWITCHES, WHITE CEILING GRILLE.

ROOFTOP UNIT SCHEDULE

* CARRIER

PLAN MARK	MODEL NUMBER *	CFM	O.A. CFM	E.S.P. IN WG	COOLING CAPACITY		HEATING CAPACITY		DRIVE	BHP (HP)	RPM	V/PH/HZ	MCA/MOCP	WEIGHT (LBS)	NOTES
					TOTAL (MBH)	EER (SEER)	INPUT (MBH)	OUTPUT (MBH)							
RTU-1	48TC012	4000	400	1"	10	10.8	180	144	DIRECT	2.50	959	208/3/60	50/60	930	1,2
RTU-2	48TC005	2000	200	1"	5	11.0	120	96	DIRECT	1.75	1345	208/3/60	27/40	652	1,2
RTU-3	48TC006	2000	-	.5"	5	11.0	120	96	DIRECT	1.75	1345	208/3/60	27/40	652	1,2
RTU-4	48TC006	2000	-	.5"	5	11.0	120	96	DIRECT	1.75	1345	208/3/60	27/40	652	1,2

NOTES:
1. PROVIDE WITH 14" ROOF CURB, INTEGRATED DIFFERENTIAL ENTHALPY CONTROLLED ECONOMIZER WITH BAROMETRIC RELIEF, AND DIGITAL PROGRAMMABLE THERMOSTAT, INTEGRAL DISCONNECT AND PRE-WIRED GFCI/WP RECEPTACLE..
2. RETURN AIR SMOKE DETECTOR FURNISHED AND INSTALLED BY E.C.

GAS MAKE-UP AIR UNIT SCHEDULE

PLAN MARK	MODEL NO.*	INPUT MBH	OUTPUT MBH	CFM	EXTERNAL STATIC PRESS. (IN. WG)	TEMP. RISE (F)	HP	RPM	DRIVE	VOLT/PH	NOTES
MAU-1	-	180	144	2520	.75"	-	2	-	DIRECT	-	1

NOTES: 1. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR MAKE-UP AIR UNIT INFORMATION.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

* TITUS

PLAN MARK	MODEL NO. *	NECK SIZE	FACE SIZE	MAX CFM	P.D.	BORDER	PATTERN	FINISH	NOTES
SA-1	TITUS OMNI	6"Ø	24"X24"	100	0.1	LAY-IN	4-WAY	WHITE	1,2,3,4
SA-2	TITUS OMNI	8"Ø	24"X24"	200	0.1	LAY-IN	4-WAY	WHITE	1,2,3,4
SA-3	TITUS OMNI	10"Ø	24"X24"	300	0.1	LAY-IN	4-WAY	WHITE	1,2,3,4
SA-4	TITUS OMNI	14"Ø	24"X24"	500	0.1	LAY-IN	4-WAY	WHITE	1,2,3,4
SB-1	TITUS S300FL	10"X6"	12"X8"	210	0.1	SURFACE	1-WAY	NOTE 5	1,5
SB-2	TITUS S300FL	14"X6"	16"X8"	300	0.1	SURFACE	1-WAY	NOTE 5	1,5
RA-1	TITUS 50	24"X48"	24"X48"	-	0.08	LAY-IN	-	WHITE	2,3,4
RA-2	TITUS OMNI	22"X22"	24"X24"	-	0.08	LAY-IN	-	WHITE	2,3,4

NOTES:
1. PROVIDE WITH OPPOSED BLADE BALANCING DAMPER.
2. PROVIDE FRAME WITH NO SCREW HOLES FOR LAY-IN CEILING INSTALLATION.
3. SECURE GRILLE/DIFFUSER TO CEILING GRID WITH A MINIMUM OF (4) #10 TECH SCREWS.
4. MECHANICAL CONTRACTOR TO VERIFY CEILING CONSTRUCTION WITH ARCHITECT AND ENSURE THAT IT IS COMPATIBLE WITH GRILLE, REGISTER, AND DIFFUSER FRAMING, INCLUDING BORDER TYPES, T-BARS, AND CROSS NOTCHES.
5. COORDINATE COLOR WITH ARCHITECT.

EXHAUST FAN SCHEDULE

* LOREN COOK

PLAN MARK	MODEL NUMBER *	CFM	E.S.P. (IN. WG)	HP (WATT)	RPM	DRIVE	SONES	WEIGHT	V/PH/HZ	NOTES
EF-1	--	2025	1"	1.0	--	--	--	--	--	2
EF-2	--	1125	.75"	.50	--	--	--	--	--	2
EF-3	GC-140	50	.25"	--	750	DIRECT	1.1	15	120/1/60	1
EF-4	GC-140	50	.25"	--	750	DIRECT	1.1	15	120/1/60	1

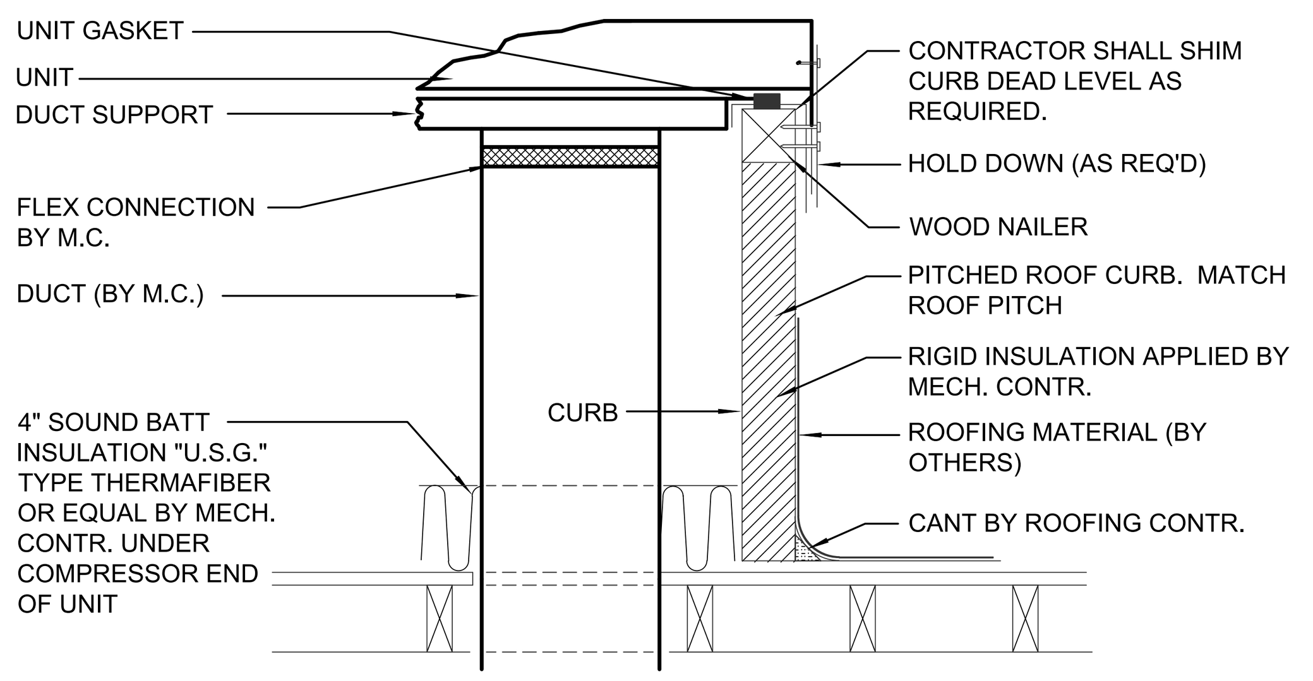
NOTES:
1. FURNISH FAN WITH FAN SPEED CONTROLLER, BACKDRAFT DAMPER, ISOLATOR KIT, AND ALUMINUM GRILLE. INTERLOCK FAN WITH LIGHT SWITCH. FAN SPEED CONTROLLER FURNISHED BY M.C., INSTALLED BY E.C. COORDINATE PRIOR TO CONSTRUCTION.
2. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR FAN INFORMATION.

AIR BALANCE SUMMARY

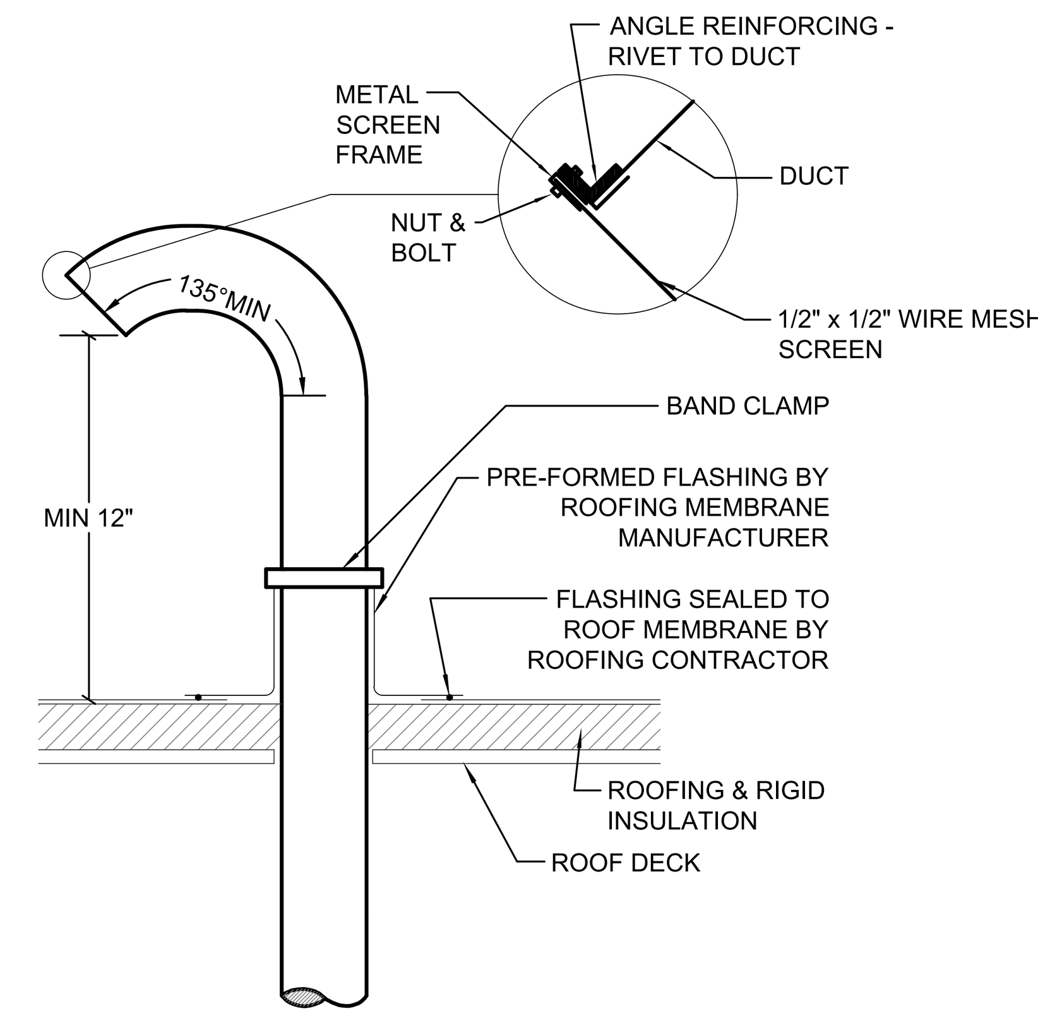
EQUIPMENT	EXHAUST CFM	SUPPLY CFM
EF-1	50	-
EF-2	50	-
EF-3	2025	-
EF-4	1125	-
MAU-1	-	2520
RTU-1	-	400
RTU-2	-	250
TOTALS	3250	3170

DUCT INSULATION SCHEDULE

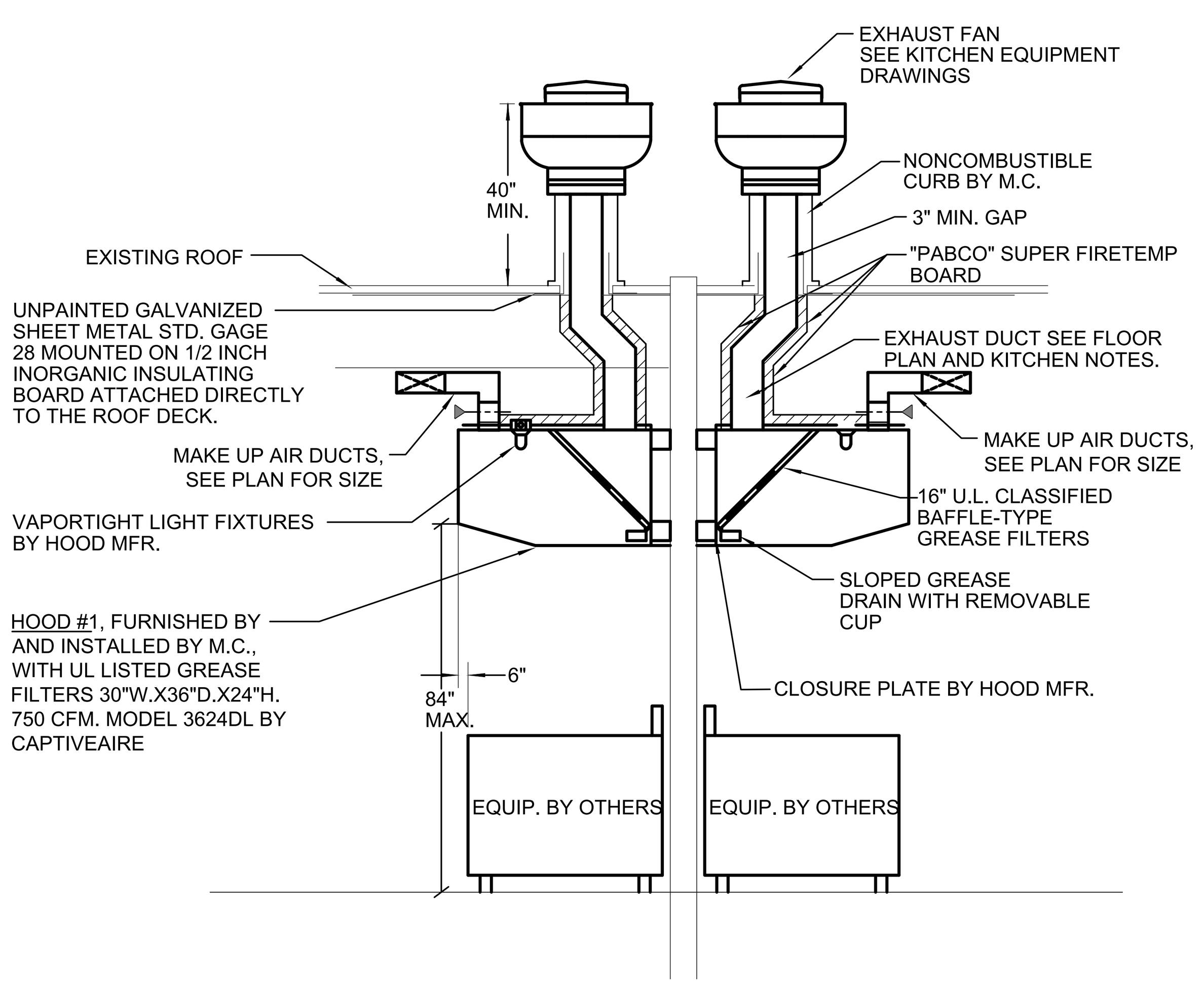
ID TAG	MATERIAL K $\frac{BTU.IN}{H.SQ.FT.F}$ AT 75 F. / D $\frac{IB}{FT^3}$	FORM	THICK-NESS	R-VALUE	NO. OF LAYERS	FIELD APPLIED JACKET	VAPOR RETARDER REQUIRED
i3	LINER (0.24/1.5)	N/A	1"	4.2	ONE	NONE	YES
i6	CERAMIC FIBER (0.24/6.0)	WRAP	1½"	6.3	TWO	NONE	NO



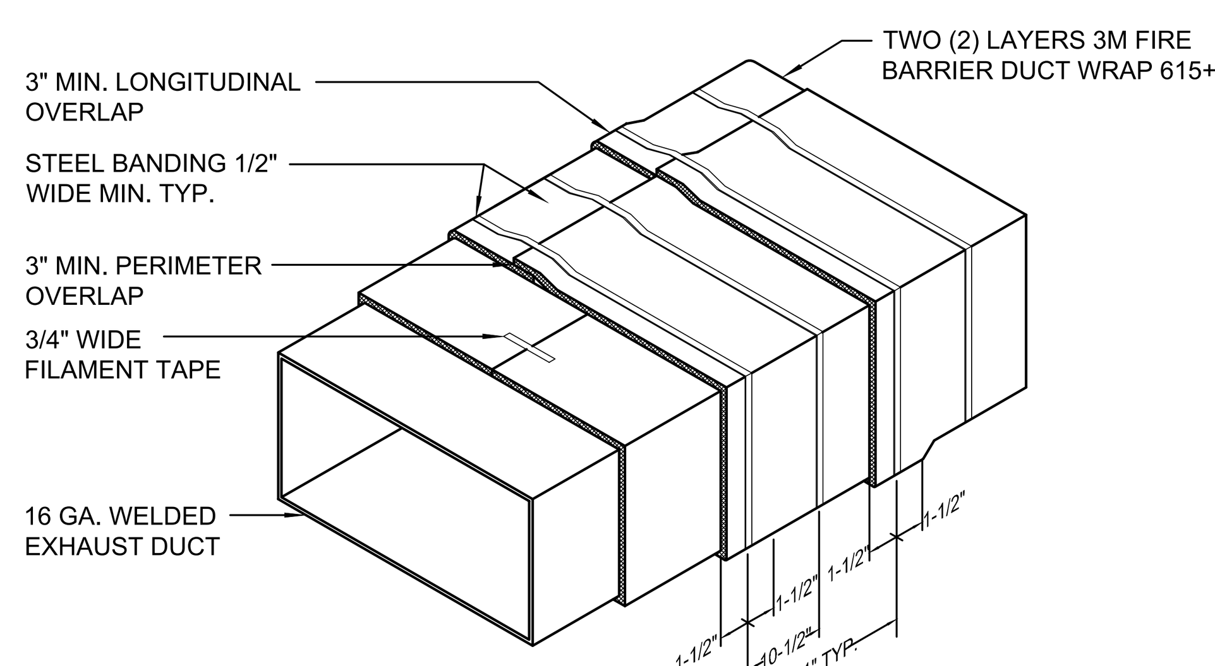
1 M1.1 ROOF CURB DETAIL
NO SCALE



2 M1.1 GOOSENECK DETAIL
NO SCALE

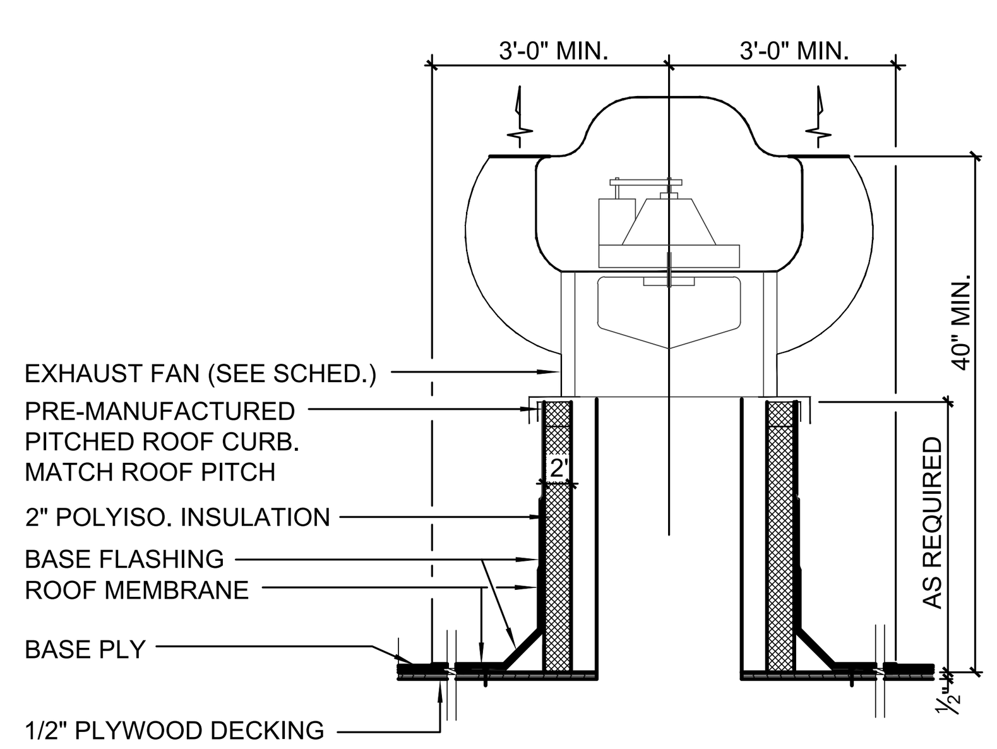


3 M1.1 SECTION THRU HOOD
NO SCALE

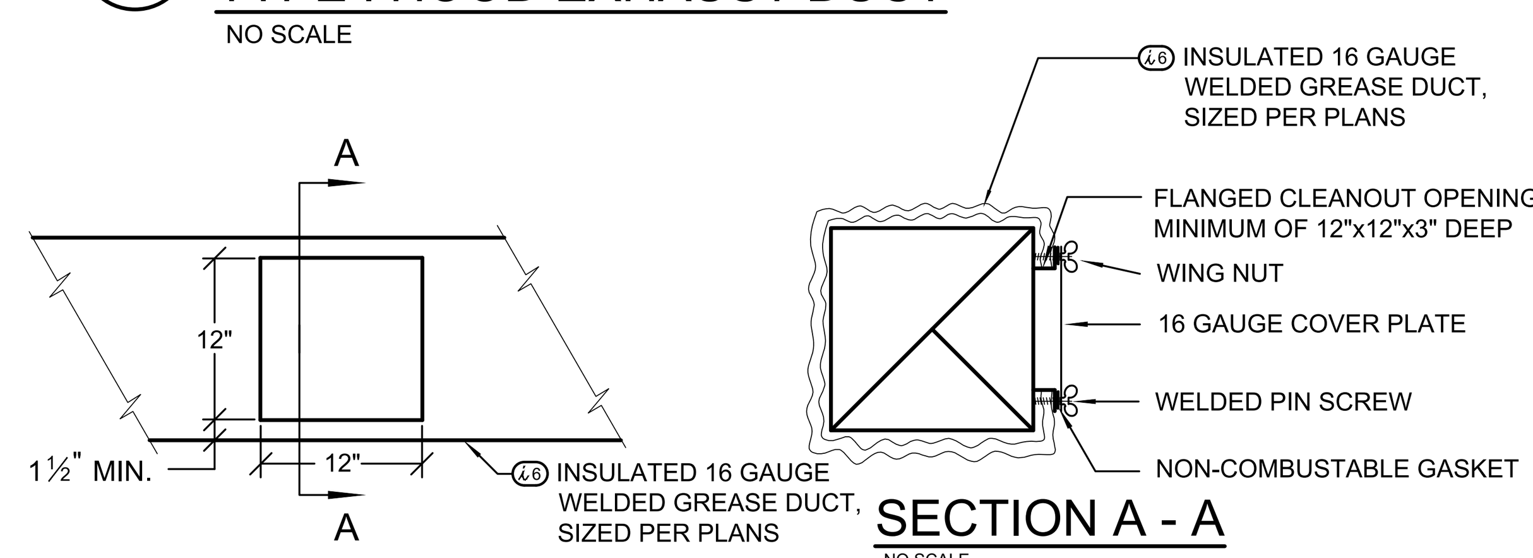


4 M1.1 TYPICAL SECTION THROUGH TYPE I HOOD EXHAUST DUCT
NO SCALE

NOTES:
1. PROVIDE 3M FIRE BARRIER DUCT WRAP 615+, TESTED IN ACCORDANCE WITH ASTM E2336 AND ICC-ES AC101.
2. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE AT ALL TIMES.
3. LAYER 3M FIRE BARRIER DUCT WRAP 615+, AS DETAILED FOR ZERO CLEARANCE TO COMBUSTIBLES.
4. FIELD MEASURE AND PRECUT DUCT WRAP.
5. PROVIDE REMOVABLE PANELS FOR ACCESS TO CLEANOUTS AS REQUIRED BY CODE AND AS NOTED ON PLANS.

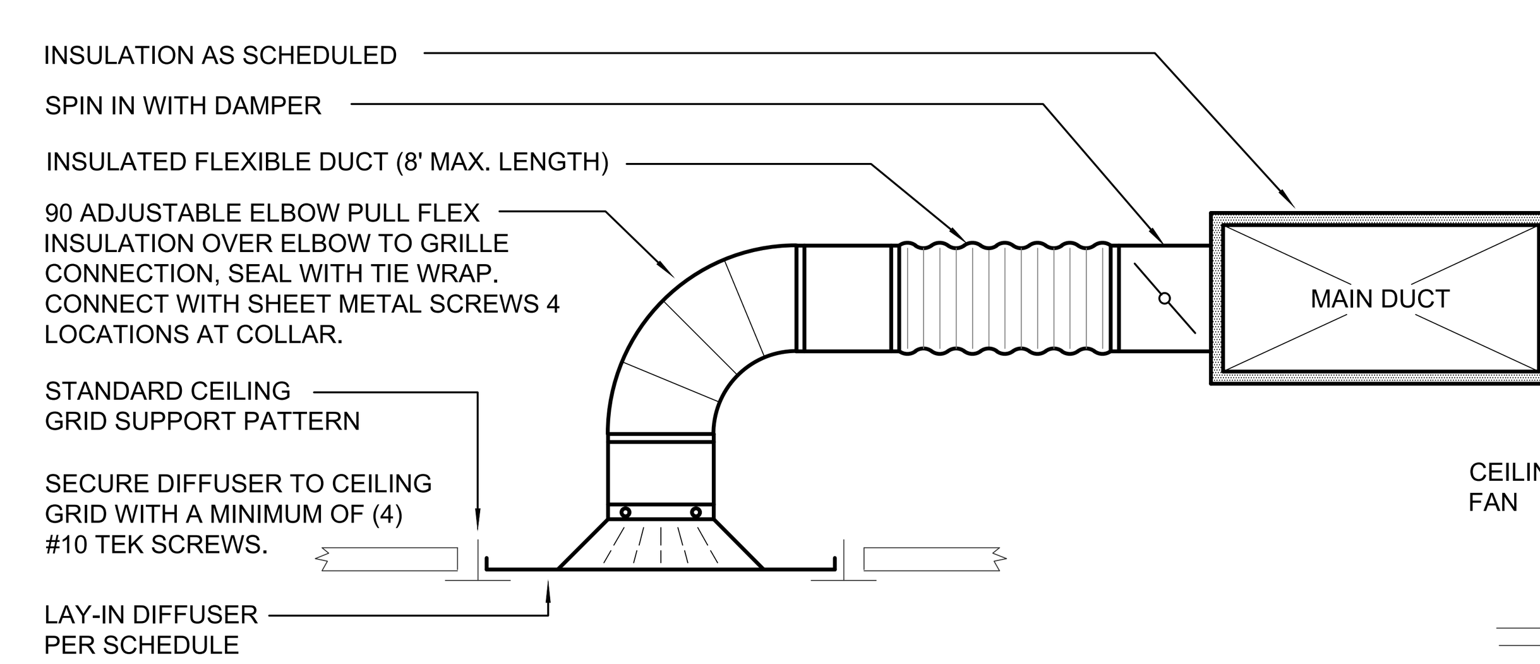


5 M1.1 KITCHEN EXHAUST FAN DETAIL
NO SCALE

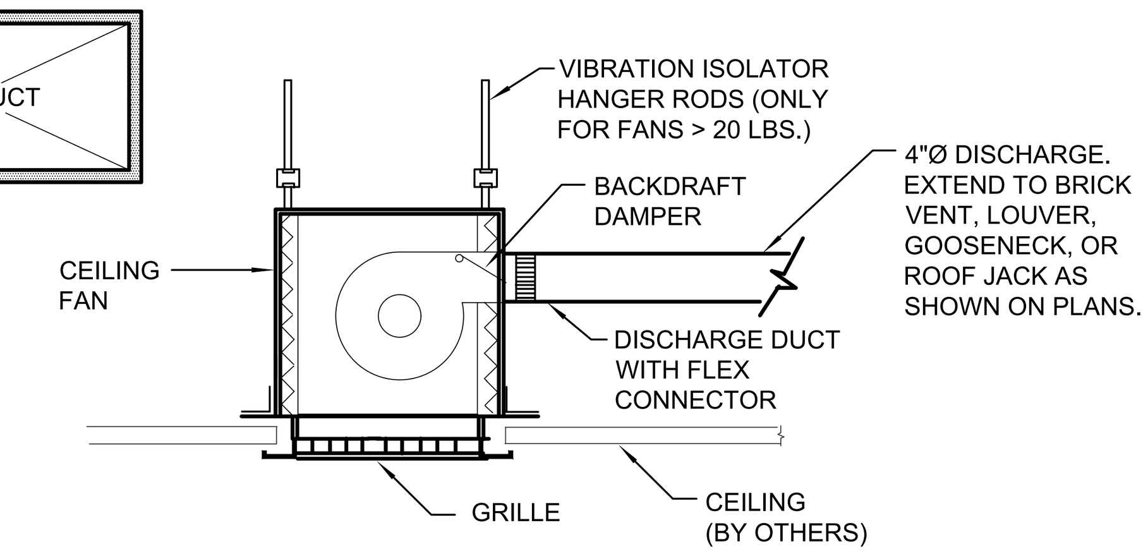


NOTE:
WHEN DUCT DIMENSIONS ARE NOT LARGE ENOUGH TO ACCOMMODATE 12"x12" CLEANOUT, CLEANOUT SHALL BE LOCATED IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE 2009 SECTION 506.3.9.
NOTE:
WHEN DUCT DIMENSIONS ARE NOT LARGE ENOUGH TO ACCOMMODATE 12"x12" CLEANOUT, CLEANOUT SHALL BE LOCATED IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE 2000 SECTION 506.3.10.
NOTE:
WHEN DUCT DIMENSIONS ARE NOT LARGE ENOUGH TO ACCOMMODATE 12"x12" CLEANOUT, CLEANOUT SHALL BE LOCATED IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE 2003 SECTION 506.3.9.

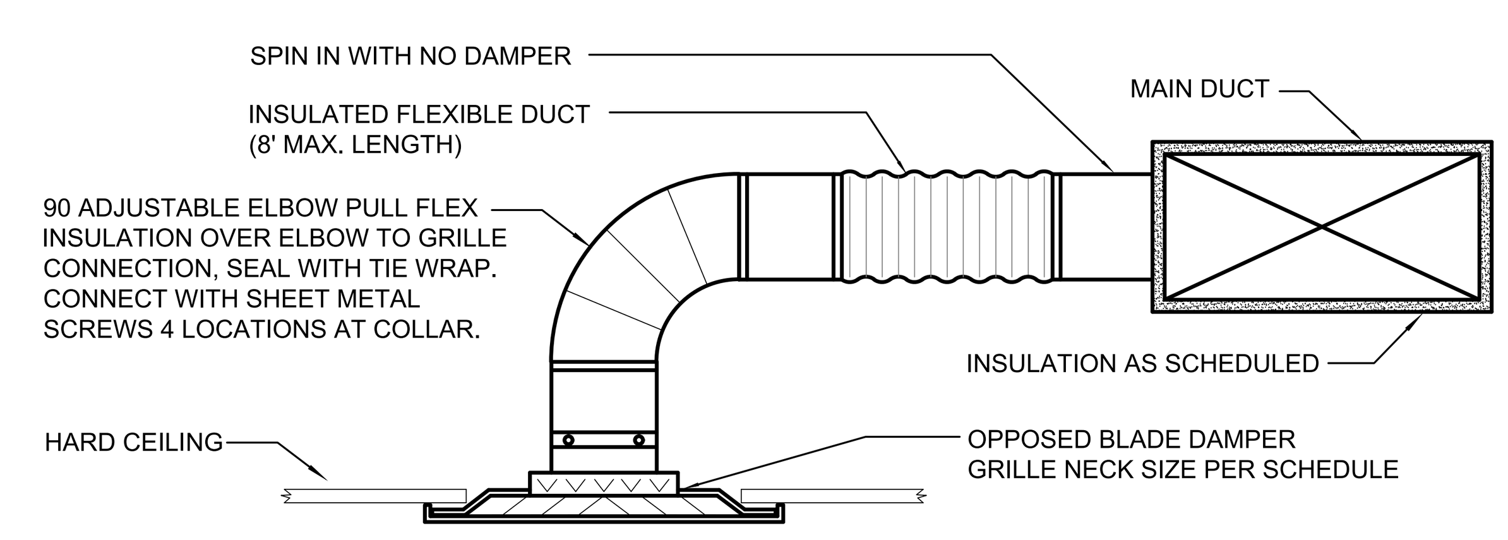
6 M1.1 DETAIL OF WELDED GREASE DUCT CLEANOUT
NO SCALE



7 M1.1 LAY-IN CEILING DIFFUSER AND BRANCH DUCT
NO SCALE



9 M1.1 CEILING EXHAUST FAN
NOT TO SCALE



8 M1.1 SURFACE MOUNTED CEILING DIFFUSER AND BRANCH DUCT
NO SCALE

LAYNECO CONSTRUCTION SERVICES
1027 COOL SPRINGS INDUSTRIAL DRIVE
O'FALLON, MO 63366
(636) 294-6245

G&W ENGINEERING
138 WILDON PARKWAY, ST. LOUIS, MO 63043
(314) 469-4600 · PROJECT NUMBER: 2020-0110.00
WWW.GANDWENGINEERING.COM
MISSOURI STATE CERTIFICATE OF AUTHORITY # 2002000612

A PROJECT FOR:
IMO'S PIZZA - ST. PETERS
MID RIVERS MALL DRIVE
ST. PETERS, MO 63376

SEAL
STATE OF MISSOURI · KEVIN S. GRIESEMER · NUMBER PE-23628 · PROFESSIONAL ENGINEER

REVISIONS

JOB NO:	2020-0110.00
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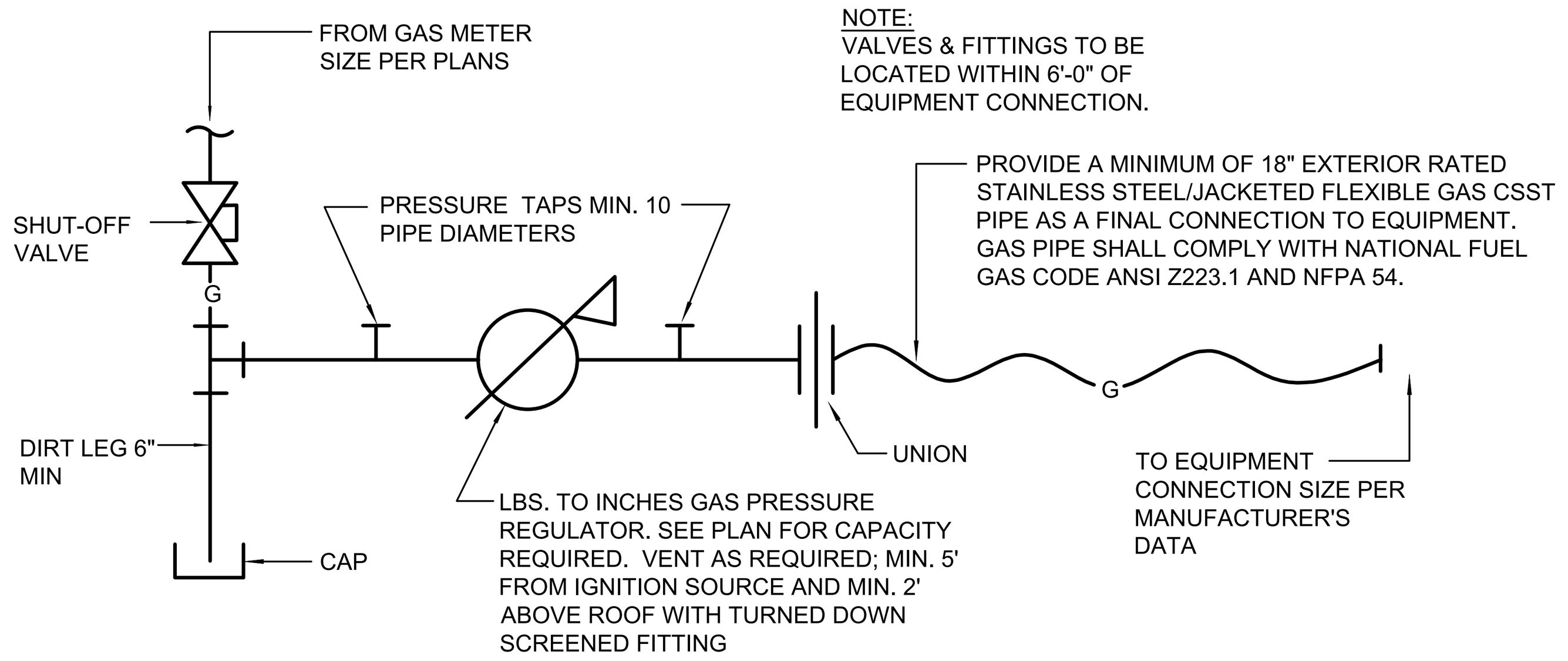
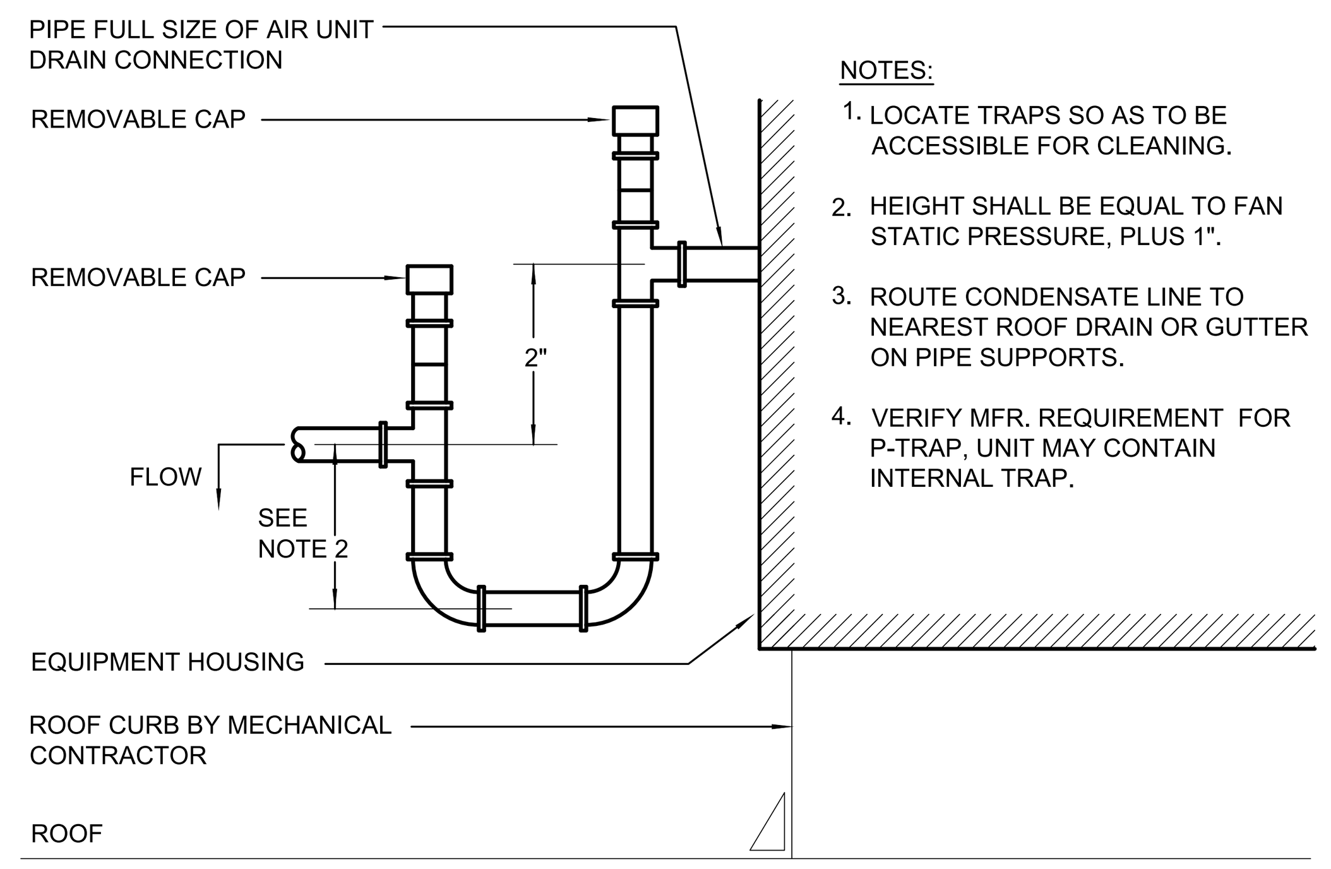
CHECKED BY:	K.S.G.
DATE:	02-28-2020
SHEET NO.	

M1.1

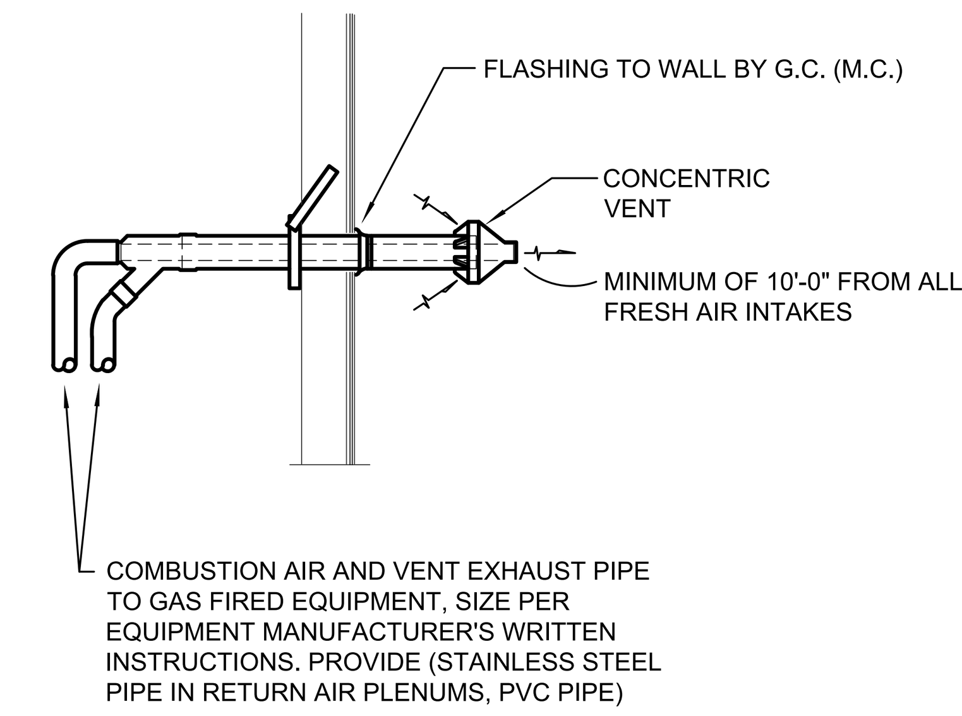
MECHANICAL SCHEDULES



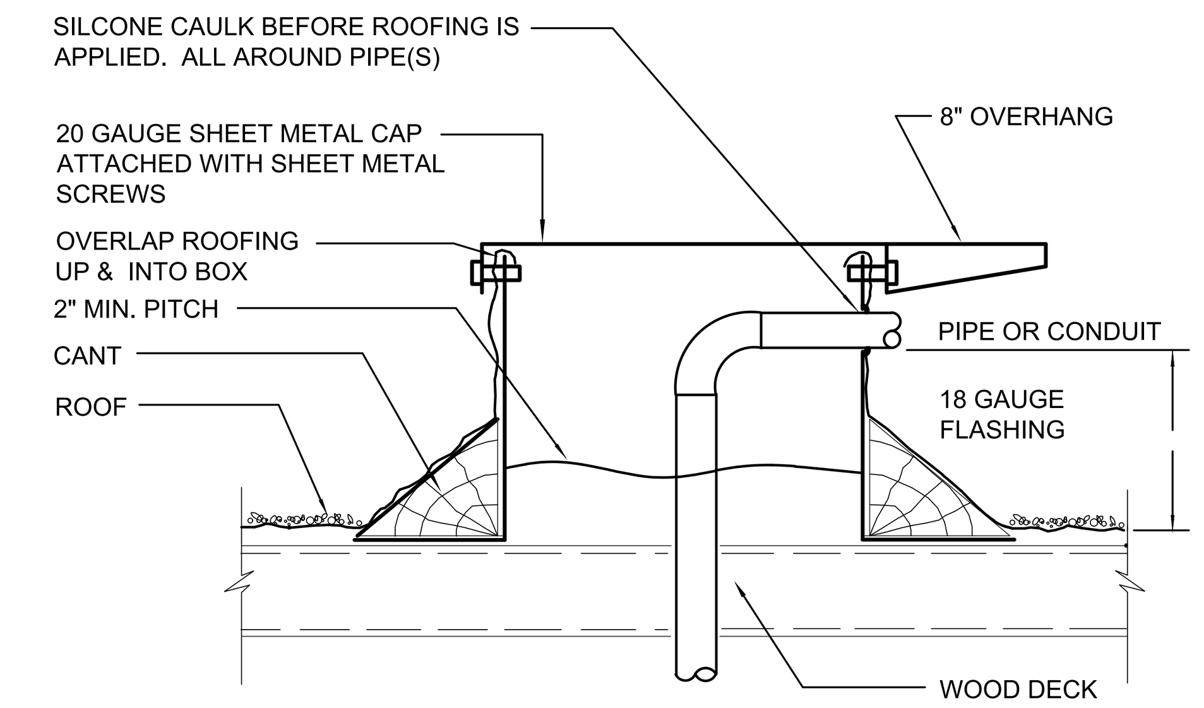
1 M1.2 **GAS PIPING CONNECTION DETAIL**
NO SCALE (SEISMIC AREAS)



2 M1.2 **RTU CONDENSATE DRAIN TRAP**
NO SCALE



3 M1.2 **COMBUSTION AIR & VENT PIPING WALL CONCENTRIC VENT KIT**
NO SCALE



4 M1.2 **PIPING THRU ROOF DETAIL**
NO SCALE

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NUMBER PE-23628
PROFESSIONAL ENGINEER

REVISIONS	
JOB NO:	2020-0110.00
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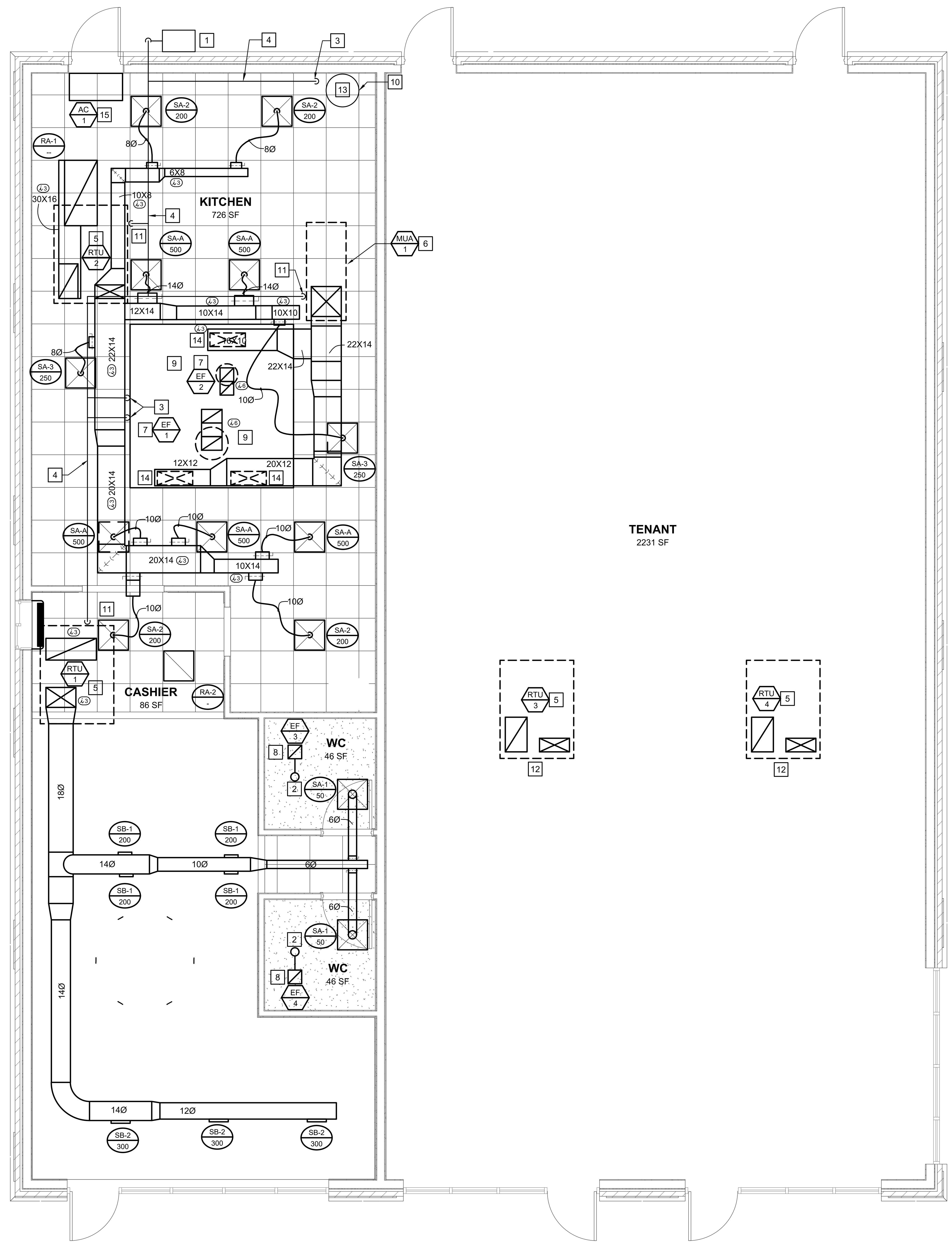
CHECKED BY:	K.S.G.
DATE:	02-28-2020
SHEET NO.	M1.2

MECHANICAL DETAILS



CEILING PLAN - MECHANICAL

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

GENERAL NOTES - MECHANICAL

A. COMPLY WITH INTERNATIONAL MECHANICAL CODE.

B. COMPLY WITH STATE AND LOCAL LAWS, ORDINANCES AND CODES,

C. APPLY FOR, PAY FOR, AND OBTAIN PERMITS NECESSARY FOR THE MECHANICAL WORK.

D. COORDINATE GAS SERVICE WITH THE GAS UTILITY. COMPLY WITH THE GAS UTILITY REQUIREMENTS FOR SERVICE.

E. COORDINATE ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT AND OTHER EQUIPMENT WIRING AS REQUIRED FOR THE EXACT EQUIPMENT TO BE INSTALLED. THE EQUIPMENT SUPPLIER SHALL PAY FOR THE CHANGES IN ELECTRICAL REQUIREMENTS DUE TO CHANGES MADE BY THE EQUIPMENT SUPPLIER.

F. PROVIDE MISCELLANEOUS HARDWARE, FITTINGS, SUPPORTS, AND OTHER MATERIALS NECESSARY FOR A COMPLETE INSTALLATION.

G. ROUTING OF DUCTWORK AND PIPING IS DIAGRAMMATIC. PROVIDE FITTINGS, ELBOWS, OFFSETS, AND OTHER COMPONENTS NECESSARY FOR A COMPLETE INSTALLATION.

H. COORDINATE THE INSTALLATION OF THE WORK WITH OTHER CONTRACTORS, SINCE THERE IS LIMITED SPACE AVAILABLE TO INSTALL THE MATERIALS.

I. DUCTWORK FABRICATION AND INSTALLATION SHALL COMPLY WITH SMACNA REQUIREMENTS.

J. HVAC EQUIPMENT SHALL BE INSTALLED IN COMPLIANCE WITH MANUFACTURER'S INSTRUCTIONS AND REQUIREMENTS.

K. LINE RECTANGULAR DUCTWORK WITH 1" LINER. INCREASE METAL SIZE.

PLAN NOTES - MECHANICAL

1. GAS METER, 2 PSI SUPPLY PRESSURE. FIELD VERIFY EXACT LOCATION.
2. 4"Ø UP THROUGH ROOF. TERMINATE WITH GOOSENECK, MINIMUM 12" ABOVE ROOF. SEE DETAIL 2/M1.1.
3. GAS LINE DOWN THROUGH ROOF. SEE DETAIL 4/M1.1.
4. GAS PIPING ON ROOF. SUPPORT PIPING WITH B-LINE DURA-BLOK PIPE SUPPORTS AND PAINT PIPING SAFETY YELLOW. REFER TO PIPE BOX DETAIL 4/M1.2 FOR MORE INFORMATION.
5. PROVIDE GAS HEAT, DX COOLING ROOFTOP UNIT AS SCHEDULED AND SPECIFIED. UNIT SHALL SIT DEAD LEVEL ON SEISMICALLY ANCHORED ISOLATION CURB. PROVIDE ALL SHIMS AND BUILD UP MATERIALS AS REQUIRED. EXTEND FULL SIZE CONDENSATE DRAIN FROM UNIT CONNECTION TO NEAREST GUTTERING SYSTEM. SEE DETAIL 2/M1.2.
6. GAS HEAT, MAKE-UP AIR UNIT (MUA-1) BY OTHERS AS SCHEDULED AND SPECIFIED IN KITCHEN EQUIPMENT DRAWINGS. UNIT SHALL SIT DEAD LEVEL ON SEISMICALLY ANCHORED ISOLATION CURB. PROVIDE ALL SHIMS AND BUILD UP MATERIALS AS REQUIRED. EXTEND FULL SIZE CONDENSATE DRAIN FROM UNIT CONNECTION TO NEAREST GUTTERING SYSTEM. SEE DETAIL 2/M1.2.
7. EXHAUST FAN BY OTHERS AS SCHEDULED AND SPECIFIED IN KITCHEN EQUIPMENT DRAWINGS. FAN SHALL SET DEAD LEVEL ON VENTED CURB, ON ROOF ABOVE.
8. PROVIDE CEILING EXHAUST FAN AS SCHEDULED AND SPECIFIED. TRANSITION FROM FAN SIZE CONNECTION AT FAN TO 4"Ø AND ROUTE ABOVE CEILING, AND UP TO GOOSENECK ON ROOF. TERMINATE WITH GOOSENECK 12" MINIMUM ABOVE ROOF, REFER TO DETAIL 2/M1.1 FOR GOOSENECK INFORMATION.
9. EXHAUST HOOD PROVIDED BY OTHERS. SEE KITCHEN EQUIPMENT DRAWINGS.
10. PROVIDE CONCENTRIC VENT KIT AND INSTALL PER MANUFACTURER'S INSTRUCTIONS AND DETAIL 3/M1.2 FOR REFERENCE.
11. REFER TO GAS CONNECTION DETAIL 1/M1.2 FOR MORE INFORMATION.
12. SUPPLY AND RETURN DUCTS STUBBED INTO TENANT SPACE CEILING, FOR FUTURE WORK.
13. DOMESTIC WATER HEATER. SEE PLUMBING DRAWINGS FOR EXACT LOCATION AND MORE INFORMATION. COORDINATE GAS PIPE ROUTING AND CONCENTRIC VENT KIT INSTALLATION PRIOR TO WORK.
14. COORDINATE MAKE UP AIR CONNECTIONS WITH HOOD INFORMATION IN KITCHEN EQUIPMENT DRAWINGS PRIOR TO STARTING WORK.
15. PROVIDE AIR CURTAIN AS SCHEDULED AND SPECIFIED. MOUNT UNIT DEAD LEVEL. PROVIDE ALL CLEARANCES PER MANUFACTURER'S RECOMMENDATIONS. INSTALL FACTORY PROVIDED CONTROLS AS SCHEDULED.

G&W ENGINEERING
138 Wildon Parkway, St. Louis, MO 63043
WWW.GANDWENGINEERING.COM

LCS LAYNECO CONSTRUCTION SERVICES
1027 COOL SPRINGS INDUSTRIAL DRIVE
O'FALLON, MO 63366
(636) 294-6245

A PROJECT FOR:

IMO'S PIZZA - ST. PETERS

MID RIVERS MALL DRIVE
ST. PETERS, MO 63376

SEAL

STATE OF MISSOURI
KEVIN S. GRIESEMER
NUMBER PE-23628
PROFESSIONAL ENGINEER

REVISIONS	
JOB NO:	2020-0110.00
DRAWN BY:	ASB/JRD/BR
CHECKED BY:	K.S.G.
DATE:	02-28-2020
SHEET NO.	

M2.1

CEILING PLAN - MECHANICAL