SYMBOLS (NOT ALL USED)

GENERAL

- NORTH ARROW
- DETAIL IDENTIFICATION NUMBER
- SHEET ON WHICH DETAIL IS DRAWN
- SECTION OR ELEVATION IDENTIFICATION LETTER
- SHEET ON WHICH SECTION OR ELEVATION IS DRAWN
- EQUIPMENT ABBREVIATION (SEE ABBREVIATION LIST)
- EQUIPMENT NUMBER
- REVISION CLOUD
- KEYNOTE
- REVISION
- POINT OF CONNECTION (P.O.C.)
- POINT OF DISCONNECTION (P.O.D.)

LINETYPE

- NEW WORK
- EXISTING WORK
- WORK TO BE REMOVED
- FUTURE

EQUIPMENT AIR MOVING DEVICE & COMPONENTS

- CENTRIFUGAL FAN
- PROPELLER FAN
- ROOF VENTILATOR, INTAKE
- ROOF VENTILATOR, EXHAUST
- DUCT SECTION, SUPPLY (POSITIVE)
- DUCT SECTION, RETURN (NEGATIVE)
- DUCT SECTION, EXHAUST (NEGATIVE)
- DIRECTION OF FLOW
- DUCT SIZE, WHERE FIRST DIMENSION IS VISIBLE DUCT
- CHANGE OF ELEVATION RISE (R) DROP (D)
- DUCTWORK, DOUBLE LINE
- ACOUSTICAL LINED DUCTWORK, DOUBLE LINE SIZE SHOWN INDICATES NET INSIDE DIMENSION
- FLEXIBLE DUCTWORK, FLEXIBLE EQUIPMENT CONNECTION, DOUBLE LINE
- DUCTWORK, SINGLE LINE
- ACOUSTICAL LINED DUCTWORK, SINGLE LINE SIZE SHOWN INDICATES NET INSIDE DIMENSION
- FLEXIBLE DUCTWORK, FLEXIBLE EQUIPMENT CONNECTION, SINGLE LINE
- TERMINAL UNIT, DUAL DUCT
- TERMINAL UNIT, SINGLE DUCT
- CEILING SUPPLY DIFFUSER WITH 4-WAY BLOW PATTERN
- CEILING SUPPLY DIFFUSER WITH 3-WAY BLOW PATTERN
- CEILING RETURN REGISTER
- CEILING EXHAUST GRILLE
- DIFFUSER/REGISTER NUMBER
- AIR INLET/OUTLET IDENTIFICATION
- AIRFLOW
- UNDERCUT DOOR, 1 INCH, 100 CFM
- HUMIDIFIER

DUCT ACCESSORIES & CONTROLS INSTRUMENTATION

- THERMOSTAT
- TEMPERATURE SENSOR
- REMOTE TEMPERATURE SENSOR
- CO2 SENSOR
- HUMIDITY SENSOR
- ROOM PRESSURE MONITOR
- MULTIROOM PRESSURE MONITOR
- AUTOMATIC DAMPER (ELECTRIC)
- AUTOMATIC DAMPER (PNEUMATIC)
- FIRE DAMPER
- COMBINATION FIRE SMOKE DAMPER (CSFD)
- BACK DRAFT DAMPER
- MANUAL VOLUME DAMPER
- SMOKE DETECTOR

PIPING

- RISE OR DROP
- TEE DOWN
- 90 DEGREE ELBOW
- DIRECTION OF SLOPE DOWN
- CHILLED WATER RETURN
- CHILLED WATER SUPPLY
- CONDENSER WATER RETURN
- CONDENSER WATER SUPPLY
- HIGH PRESSURE CONDENSATE
- HIGH PRESSURE STEAM
- MEDIUM PRESSURE CONDENSATE
- MEDIUM PRESSURE STEAM
- LOW PRESSURE CONDENSATE
- LOW PRESSURE STEAM
- HEATING HOT WATER RETURN
- HEATING HOT WATER SUPPLY
- PUMP CONDENSATE
- CONDENSATE
- REFRIGERAN LIQUID
- REFRIGERAN SUCTION

VALVES

- BALL VALVE
- BUTTERFLY VALVE
- PLUG VALVE
- GATE/GLOBE ANGLE VALVE
- GATE/GLOBE VALVE
- TWO WAY VALVE
- THREE WAY VALVE
- CHECK VALVE
- CONTROL VALVE
- PRESSURE REDUCING VALVE
- AIR VENT AUTOMATIC
- AIR VENT MANUAL

FITTING & PIPING SPECIALTIES

- PLUG OR CAP
- REDUCER
- BALANCING COCK
- UNION, SCREWED
- UNION, FLANGED
- FLEXIBLE CONNECTOR
- PRESSURE GAUGE
- PRESSURE SWITCH
- PUMP (INDICATE USE)
- STRAINER
- THERMOMETER, TEMPERATURE SENSOR

ABBREVIATIONS (NOT ALL USED)

AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AMB	AMBIENT
ARCH	ARCHITECTURAL
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
°C	DEGRESS CENTRIGRADE (CELCIUS)
CBC	CALIFORNIA BUILDING CODE
CC	COOLING COIL
CD	CEILING DIFFUSER
CD	CONDENSATE DRAIN
CFC	CALIFORNIA FIRE CODE
CFM	CUBIC FOOT/FEET PER MINUTE
CFSD	COMBINATION FIRE/SMOKE DAMPER
CG	CEILING GRILLE
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
CMC	CALIFORNIA MECHANICAL CODE
COND	CONDENSATE
CONN	CONNECTION
CONT	CONTINUATION
CR	CEILING RETURN
CU FT	CUBIC FEET
CU IN	CUBIC INCHES
DN	DOWN
DWG	DRAWING
EA	EXHHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EES	ENERGY EFFICIENCY STANDARD (TITLE 24)
EF	EXHAUST FAN
EL	ELEVATION
ELEC	ELECTRICAL
ENT	ENTERING
EQPM	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
°F	DEGREES FAHRENHEIT
(F)	FUTURE
FD	FIRE DAMPER
FF	FINAL FILTER
FLA	FULL LOAD AMPERES
FLR	FLOOR
FLX	FLXIBLE CONNECTION
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET
GA	GAUGE
GAL	GALLON
GC	GENERAL CONTRACTOR
GPH	GALLON PER HOUR
GPM	GALLON PER MINUTE
H	HEIGHT
HC	HEATING COIL
HD	HOT DECK/HOT DUCT
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
KW	KILOWATT
L	LENGTH
(L)	LINED DUCTWORK
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LBD	LEAVING DRY BULB TEMPERATURE
LIN FT	LINEAR FEET
LVG	LEAVING
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MB	MIXING BOX
MBH	THOUSAND BTU PER HOUR
MIN	MINIMUM
MUA	MAKE-UP AIR
NIC	NNOT IN CONTACT
NTS	NOT TO SCALE
OSA/OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
POC	POINT OF CONNECTION
POD	POINT OF DISCONNECTION
RA	RETURN AIR
RG	RETURN GRILLE
RG	REFRIGERATION GAS LINE
RH	REHEAT COIL
RL	REFRIGERATION LIQUID LINE
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SF	SUPPLY FAN
SOV	SHUT OFF VALVE
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SQ.FT.	SQUARE FOOT
SS	STAINLESS STEEL
TA	TRANSFER AIR
TEMP	TEMPERATURE
TF	TRANSFER FAN
TG	TRANSFER GRILLE
TV	TURNING VANES
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UTR	UP THROUGH ROOF
V	VOLTS
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VENT	VENTILATION AIR
W	WIDTH
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WG	WATER GAUGE
WMS	WIRE MESH SCREEN

GENERAL NOTES

1. ALL WORK, INSTALLATION, AND MATERIALS SHALL COMPLY WITH ALL CURRENT GOVERNING CODES, BUILDING STANDARDS, REGULATIONS, SPECIFICATIONS, AND ALL OTHER REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION. WHERE REQUIREMENTS BETWEEN THESE VARY, THE MOST STRINGENT SHALL APPLY.
2. ALL WORK SHALL BE PERMITTED. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS, FEES, AND LICENSES, UNLESS OTHERWISE DEFINED BY OWNER.
3. CONTRACTOR SHALL EXAMINE THE COMPLETE SET OF DRAWINGS AND SPECIFICATIONS FOR ALL TRADES PRIOR TO SUBMITTING BID AND START OF WORK.
4. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID AND THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING FIELD CONDITIONS, INCLUDING BUT NOT LIMITED TO DIMENSIONS, THE EXISTING INSTALLATIONS, POINTS OF (DIS)CONNECTION, AND REQUIRED CLEARANCES. CONTRACTOR SHALL MAKE ANY MINOR ADJUSTMENTS NECESSARY TO AVOID CONFLICTS WITH THE BUILDING STRUCTURE AND THE WORK OF OTHER TRADES. THIS SHALL BE VERIFIED PRIOR TO BID SUBMITTAL, START OF CONSTRUCTION, AND/OR FABRICATION OF MATERIALS. BY THE ACT OF SUBMITTING A BID, THE CONTRACTOR ACCEPTS THE GIVEN WORKING CONDITIONS.
5. IF DISCREPANCIES ARE ENCOUNTERED BETWEEN THE DRAWINGS, BUILDING STANDARDS, SPECIFICATIONS, AND/OR CURRENT CONDITIONS, THE ENGINEER AND ARCHITECT SHALL BE NOTIFIED WITH A REQUEST FOR CLARIFICATION, AND THE OWNER SHALL BE NOTIFIED IN WRITING PRIOR TO COMMENCEMENT OF WORK. IF WORK IS DONE WITHOUT WRITTEN APPROVAL FROM OWNER REPRESENTATIVE, THE WORK SHALL BE CONSIDERED AT-RISK, AND A NON-CONFORMABLE INSTALLATION.
6. ALL DRAWINGS AND LAYOUTS ARE DIAGRAMMATIC TO SHOW DESIGN INTENT ONLY. CONTRACTOR SHALL COORDINATE NEW WORK WITH THE WORK OF ALL OTHER TRADES AND EXISTING CONDITIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL ALL WORK IN SUCH A MANNER AS TO AVOID OBSTRUCTIONS, PRESERVE HEADROOM, KEEP OPENINGS AND PASSAGEWAYS CLEAR, AND MAKE ALL EQUIPMENT REQUIRING INSPECTION, MAINTENANCE, AND REPAIR ACCESSIBLE WITHOUT EXTRA COST TO THE OWNER. NO CONSIDERATION SHALL BE GRANTED DUE TO LACK OF FAMILIARITY ON THE PART OF THE CONTRACTOR WITH ACTUAL PHYSICAL CONDITIONS, REQUIREMENTS, AND PRACTICES AT THE SITE.
7. SUBMIT ELECTRONIC PDF COPIES OF SUBMITTAL DOCUMENTS WITH DESCRIPTIVE DATA AND PROJECT-SPECIFIC PERFORMANCE FOR ALL PRODUCTS AND MATERIALS PROPOSED FOR THE PROJECT. CLEARLY INDICATE EXACT MAKE/MODEL INCLUDING ANY ACCESSORIES AND OPTIONS PROPOSED. SHOP DRAWINGS AT THE SAME SCALE AS THE CONSTRUCTION DOCUMENTS OR LARGER SHALL BE INCLUDED WITH SUBMITTALS AS REQUIRED. HARD COPY SUBMITTALS WILL NOT BE ACCEPTED. ALLOW A MINIMUM OF FIVE (5) WORKING DAYS FOR ENGINEER TO REVIEW SUBMITTALS. SUBMITTALS SHALL BE FOR A COMPLETE SYSTEM AND NOT A PARTIAL REPRESENTATION OF A SYSTEM.
8. SUBMIT REQUEST FOR INFORMATION (RFI) IN ELECTRONIC PDF FORMAT WITH PROPOSED SOLUTION INCLUDED, IF APPLICABLE. ALLOW MINIMUM OF THREE (3) WORKING DAYS FOR ENGINEER TO REVIEW AND RESPOND.
9. PREPARE COORDINATED SHOP DRAWINGS WITH ALL TRADES, INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING, ELECTRICAL, FIRE PROTECTION, STRUCTURAL, ETC. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION OF NEW/RELOCATED COMPONENTS. CONTRACTOR SHALL NOT USE THE ENGINEERED CAD FILES AS SHOP DRAWINGS. SHOP DRAWINGS SHALL CONFORM TO ALL SECTIONS OF AIA 201.
10. CONTRACTOR SHALL COMPLY WITH ALL CONTRACT DOCUMENTS IN LAYING OUT AND INSTALLING THEIR WORK AND EQUIPMENT. PRIOR TO INSTALLATION, COORDINATE WORK WITH THE WORK OF ALL OTHER TRADES AND JOB CONDITIONS.
11. CONTRACTOR SHALL OBTAIN AND FOLLOW ALL LANDLORD/OWNER REQUIREMENTS, GUIDELINES, RULES, AND PROCEDURES FOR CONSTRUCTION. CONTRACTOR SHALL PROVIDE INSURANCE IN ACCORDANCE WITH THE BUILDING'S CERTIFICATE OF INSURANCE REQUIREMENTS.
12. IF ANY EQUIPMENT SUBMITTED BY THE CONTRACTOR IS DIFFERENT FROM THE BASIS OF DESIGN SPECIFIED, CHANGES SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL. SUBMITTALS SHALL INDICATE ANY RESULTING CREDIT, ADDED COST, AND/OR ADJUSTMENT IN LEAD TIME. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR PAYMENT OF ALL CHARGES RESULTING FROM ADDITIONS OR CHANGES IN THE WORK OF OTHER TRADES THAT ARE NECESSARY TO ACCOMMODATE THE REQUESTED SUBSTITUTION, UNLESS APPROVED BY OWNER. CONTRACTOR WILL PROCEED AT THEIR OWN RISK IF CHANGES OCCUR WITHOUT PRIOR APPROVAL.
13. ALL PENETRATIONS OF DUCTWORK, PIPING, CONDUITS, AND VENTS THROUGH FIRE, SMOKE, OR COMBINATION FIRE/SMOKE RATED BARRIERS SHALL HAVE FIRESTOP AND/OR SMOKE SEAL PROTECTION IN ACCORDANCE WITH THE STATE MINIMUM BUILDING CODE AND AUTHORITIES HAVING JURISDICTION. FIRESTOP AND SMOKE STOP PRODUCTS SHALL BE UL LISTED.
14. ALL PENETRATIONS OF DUCTWORK, PIPING, CONDUITS, AND VENTS THROUGH NON-RATED CONSTRUCTION SHALL BY PROPERLY AND GENEROUSLY CAULKED WITH SOUND-RESISTANT AND NON-HARDENING MATERIAL, SUCH AS SILICONE.
15. COORDINATE WITH OWNER'S ROOFING CONTRACTOR PRIOR TO MAKING ANY PENETRATIONS THROUGH ROOF. ROOF WARRANTY SHALL BE MAINTAINED.
16. FLASHING, COUNTER-FLASHING, AND ROOF MEMBRANE PATCHES AT ALL ROOF OPENINGS SHALL MATCH AND BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE EXISTING ROOFING SYSTEM.
17. PROVIDE GENERAL CONTRACTOR WITH FINAL SIZES AND LOCATIONS OF ALL WALL, FLOOR, AND ROOF PENETRATIONS TO COORDINATE REQUIRED STRUCTURAL FRAMING MEMBERS.
18. COORDINATE ALL CUTTING, DRILLING, PATCHING, AND REINFORCING REQUIRED FOR WORK WITH THE GENERAL CONTRACTOR.
19. PROVIDE ACCESS PANELS/DOORS FOR ALL EQUIPMENT LOCATED IN INACCESSIBLE AREAS, SUCH AS ABOVE HARD LID CEILING OR BEHIND WALLS. ALL ACCESS PANEL/DOOR LOCATIONS SHALL BE COORDINATED WITH ARCHITECT.
20. REQUIRED ACCESS AND WORKING SPACE CLEARANCES FOR ALL EQUIPMENT AND CONTROL DEVICES MUST BE MAINTAINED TO ALLOW READY AND SAFE OPERATION, EXAMINATION, AND MAINTENANCE. REQUIRED CLEARANCES SHALL BE PER MANUFACTURER'S RECOMMENDATION AND GOVERNING CODES.
21. CONTRACTOR SHALL SECURE SITE WHILE WORK IS IN PROGRESS AND UNTIL THE WORK IS ACCEPTED BY OWNER'S REPRESENTATIVE.
22. THE CONTRACTOR IS SOLELY RESPONSIBLE TO PROVIDE METHODS OF PROCEDURE AND PERFORM ALL CONSTRUCTION MEANS AND METHODS.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE, CAUSED BY THE WORK, TO EXISTING CONDITIONS OR THE WORK OF OTHER TRADES.
24. CONTRACTOR SHALL COORDINATE MOVEMENT AND STORAGE OF EQUIPMENT AND ALL OTHER COMPONENTS, INCLUDING TAKING ALL NECESSARY PRECAUTIONS TO COVER ALL EQUIPMENT/COMPONENTS TO PROTECT THEM FROM EXPOSURE TO OUTDOOR ELEMENTS, CONDITIONS OUTSIDE OF MANUFACTURER'S STORAGE CONDITIONS, AND CONSTRUCTION DEBRIS, WHETHER OR NOT EQUIPMENT IS POWERED OR IN USE.
25. ALL MATERIALS SHALL BE NEW, BEAR THE UNDERWRITERS LABORATORIES (UL) OR EQUIVALENT TESTING AGENCY LABEL, AND BE APPROVED BY THE AUTHORITIES HAVING JURISDICTION.
26. CONTRACTOR SHALL MAINTAIN RED-LINED AS-BUILT DRAWINGS DURING CONSTRUCTION TO DOCUMENT ALL CHANGES AND MODIFICATIONS TO THE CONTRACT DOCUMENTS. CONTRACTOR SHALL SUBMIT COMPLETE RED-LINED AS-BUILT DRAWINGS, UPON COMPLETION OF THE WORK, FOR REVIEW BY THE ARCHITECT/ENGINEER.
27. FURNISH FINAL CERTIFICATE OF INSPECTION OR WRITTEN EVIDENCE OF ACCEPTANCE BY INSPECTION AUTHORITIES FOR ALL WORK INSTALLED.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR MATINAINING A CLEAN AND SAFE WORK ENVIRONMENT THROUGHOUT THE DURATION OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL CONSTRUCTION DEBRIS, WITH ALL COSTS FOR DISPOSAL BORNE BY CONTRACTOR. UPON COMPLETION OF WORK, AREA(S) OF WORK SHALL BE LEFT IN A CLEAN CONDITION, ACCEPTABLE TO OWNER.
29. ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF IN AN ENVIRONMENTALLY RESPONSIBLE FASHION. RECYCLABLE MATERIAL SHALL BE PROPERLY RECYCLED, AND HAZARDOUS MATERIALS SHALL BE DISPOSED OF WITH PROPER CHAIN OF CUSTODY.
30. ALL PLANS APPROVED BY GOVERNING AGENCIES SHALL BE KEPT IN A SECURE PLACE AND SHALL NOT BE USED BY WORKERS. CONTRACTOR SHALL FURNISH ALL SUBCONTRACTORS CONSTRUCTION SETS REFLECTING THE APPROVED PLANS. CONTRACTOR SHALL ALSO MAINTAIN, IN GOOD CONDITION, ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS. THIS COMPLETE SET SHALL REMAIN ON PREMISES AT ALL TIMES, UNDER CARE OF THE JOB SUPERINTENDENT.
31. CONTRACTOR SHALL PROVIDE A WRITTEN WARRANTY TO REPLACE OR REMEDY ALL FAULTY, IMPROPER, OR INFERIOR MATERIALS AND/OR CORRECT FAULTY INSTALLATION AT NO COST TO OWNER, INCLUDING PARTS AND LABOR, FOR A PERIOD OF ONE (1) YEAR FROM DATE OF OWNER'S WRITTEN ACCEPTANCE OF ALL WORK INSTALLED.
32. PROVIDE OWNER WITH OPERATION AND MAINTENANCE MANUALS, GUARANTEES, AND WARRANTIES FOR ALL EQUIPMENT INSTALLED IN THE PROJECT.

MECHANICAL NOTES

1. ALL DRAWINGS AND LAYOUTS ARE DIAGRAMMATIC TO SHOW DESIGN INTENT ONLY. LOCATIONS OF DUCTWORK, PIPING, AND EQUIPMENT ARE APPROXIMATE. DUCT/PIPE OFFSETS, TRANSITIONS, SUPPORTS, AND HANGERS MAY NOT BE INDICATED. CONTRACTOR SHALL PROVIDE ALL TRANSITIONS AND FITTINGS NECESSARY FOR COMPLETE AND FUNCTIONING SYSTEMS. IF FIELD CONDITIONS DIFFER SIGNIFICANTLY FROM THOSE SHOWN ON THE DRAWINGS AND AFFECT MECHANICAL WORK, INFORM ENGINEER OF RECORD IMMEDIATELY AND CONFIRM FURTHER DIRECTION BEFORE PROCEEDING WITH THE WORK IN THAT AREA.
2. DUE TO STRUCTURAL CONDITIONS, DUCTWORK OR PIPING INTERFERENCE, EXISTING OBSTRUCTIONS, OR OTHER REASONS, THE CONTRACTOR MAY WANT TO INSTALL WORK IN A MANNER DIFFERENT FROM THAT SHOWN IN THE CONTRACT DOCUMENTS. SUCH CHANGES SHALL BE PRESENTED TO THE ENGINEER OF RECORD AND OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE PROCEEDING, AND THE RECORD DRAWING SHALL BE ACCURATELY REVISED TO SHOW THE CHANGES AS COMPLETED.
3. ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE NET CLEAR INSIDE DIMENSIONS AFTER INSULATION/LINING HAS BEEN INSTALLED.
4. PIPING ANCHORAGE, SUPPORT, AND THERMAL EXPANSION DEVICES ARE TO BE PROVIDED BY THE CONTRACTOR TO MEET ALL CODE REQUIREMENTS. PIPING SUPPORTS AND THERMAL EXPANSION DEVICES SHALL BE INCORPORATED INTO THE SHOP DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL.
5. ALL DUCTWORK AND PIPING SHALL BE ROUTED TIGHT TO STRUCTURE.
6. WHERE DEMOLITION DOES NOT ALLOW FOR MAINTAINING EXISTING HVAC SERVICE, CONTRACTOR SHALL PROVIDE TEMPORARY COOLING AND/OR HEATING WITH SUFFICIENT CAPACITY TO MAINTAIN COMFORT COOLING AND/OR HEATING, AT NO ADDITIONAL COST TO OWNER.
7. DUCTWORK, PIPING, AND FITTINGS SHALL CONFORM TO THE REQUIREMENTS OF THE WORKING PRESSURES INDICATED IN THE SPECIFICATIONS.
8. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED, AND TESTED IN ACCORDANCE WITH THE MOST RESTRICTIVE OF LOCAL REGULATIONS AND PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS AND THE APPLICABLE STANDARDS ADOPTED BY SMACNA. PROVIDE RECTANGULAR DUCTS OF GALVANIZED STEEL AND PREFABRICATED SPIRAL LOCKSEAM DUCTS AND FITTINGS.
9. DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH CHAPTER 6 OF THE CMC.
10. AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET-METAL, OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER, AND DEBRIS WHICH MAY ENTER THE SYSTEM.
11. ALL PIPING AND ASSOCIATED FITTINGS AND VALVES SHALL BE OF SIMILAR MATERIAL PER CODE, UNLESS APPROVED OTHERWISE. DISSIMILAR MATERIALS SHALL BE CONNECTED OR FASTENED BY DIELECTRIC MEANS APPROPRIATE.
12. ALL PIPING AND DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS IN SECTIONS 120.3 AND 120.4 OF THE BUILDING ENERGY EFFICIENCY STANDARDS AND CHAPTER 6 OF THE CMC.
13. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT ALL EQUIPMENT CONNECTIONS, UNLESS OTHERWISE NOTED.
14. ALL MECHANICAL EQUIPMENT PADS SHALL EXTEND A MINIMUM OF 6" BEYOND THE FOOTPRINT OF THE UNIT ON ALL SIDES. MECHANICAL EQUIPMENT PADS LOCATED ON THE ROOF SHALL BE A MINIMUM OF 8" HIGH FOR FLASHING.
15. SUPPORT ALL SUSPENDED MECHANICAL EQUIPMENT WITH FULLY THREADED RODS AND VIBRATION ISOLATORS PER THE ASHRAE HANDBOOK OF HVAC APPLICATIONS.
16. ALL SUSPENDED CEILING MECHANICAL FIXTURES SHALL BE SUPPORTED BY ADDITIONAL INDEPENDENT 12 GAGE WIRES ATTACHED TO EACH CORNER OF FIXTURES. (ASCE 7 SECTION 13.5.6.2.2, CISCA)
17. FIRE DAMPERS AND/OR SMOKE DAMPERS AND THE NECESSARY ACCESS PANELS SHALL BE PROVIDED FOR ALL DUCTS PENETRATING FIRE AND/OR SMOKE BARRIERS/PARTITIONS, AS REQUIRED BY CODE. SEE ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATIONS OF FIRE AND/OR SMOKE RATED BARRIERS/PARTITIONS.
18. SMOKE DETECTORS AND REMOTE ANNUNCIATOR ARE SUPPLIED BY MECHANICAL CONTRACTOR. SMOKE DETECTORS SHALL BE INSTALLED AND INTERLOCKED FOR SHUTDOWN IN ACCORDANCE WITH DIVISION 23. SEE SPECIFICATIONS.
19. ALL DUCT SMOKE DETECTORS INDICATED ON MECHANICAL DRAWINGS ARE FOR REFERENCE ONLY AND SHALL BE FURNISHED, INSTALLED AND WIRED UNDER ELECTRICAL WORK DIVISION "260000" OF SPECIFICATION.
20. MATERIALS EXPOSED WITHIN DUCTWORK OR PLENUMS SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 25 AND MAXIMUM SMOKE-DEVELOPMENT RATING OF 50, WHEN TESTED IN ACCORDANCE WITH ASTM E84.
21. ALL NEW THERMOSTATS SHALL COMPLY WITH THE LATEST BUILDING ENERGY EFFICIENCY STANDARDS REFERENCE JOINT APPENDIX JA5.
22. ROOM THERMOSTATS SHALL BE CAPABLE OF BEING SET TO MAINTAIN SPACE TEMPERATURE SET POINTS FROM 55°F TO 85°F AND BE CAPABLE OF OPERATING THE HEATING AND COOLING IN SEQUENCE. THERMOSTATS SHALL BE ADJUSTABLE TO PROVIDE A TEMPERATURE RANGE OF UP TO 10°F BETWEEN HEATING AND COOLING SETPOINTS. CONTROLS SHALL HAVE CAPABILITY OF LIMITING HEATING SETPOINT ADJUSTMENT TO A MAXIMUM OF 70°F AND LIMITING COOLING SETPOINT ADJUSTMENT TO A MINIMUM OF 78°F.
23. THERMOSTATS SHALL BE LOCATED PER CBC FOR ADA COMPLIANCE AND CENTERED DIRECTLY ABOVE LIGHT SWITCHES UNLESS OTHERWISE NOTED. COORDINATE WITH ARCHITECT PRIOR TO INSTALLATION.
24. CO_2 SENSORS SHALL BE LOCATED BETWEEN 3' TO 6' AFF. COORDINATE WITH ARCHITECT PRIOR TO INSTALLATION.
25. CONTRACTOR SHALL COORDINATE ALL NEW EQUIPMENT DESIGNATIONS WITH OWNER.
26. PROVIDE STEEL SUPPORTS FOR ALL WORK AS REQUIRED FOR A COMPLETE INSTALLATION IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS. PROVIDE SUPPLEMENTARY FRAMING AS REQUIRED FOR ATTACHMENT OF HANGERS, SUPPORTS, AND ANCHORS. DESIGN SUPPLEMENTAL FRAMING UNDER DIRECT SUPERVISION OF STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA AND SUBMIT FOR ARCHITECT/ENGINEER REVIEW.
27. CONTRACTOR SHALL COORDINATE AND PROVIDE STRUCTURAL MOUNTING FOR ALL EQUIPMENT SHOWN ON THE PLANS OR SPECIFIED, INCLUDING THOSE SHOWN SPECIFICALLY ON THE DETAIL SHEET(S).
28. CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE OF EACH PIECE OF EQUIPMENT REQUIRING POWER WITH THE ELECTRICAL CONTRACTOR.
29. PROVIDE MANUAL BALANCING DAMPER AT EACH SUPPLY/RETURN/EXHAUST BRANCH DUCT AS FAR FROM AIR INLET/OUTLET AS POSSIBLE. PROVIDE MANUAL BALANCING DAMPER WITH REMOTE CONTROL WHEN IS LOCATED ABOVE GYPBOARD CEILING.
30. ALL BRANCH DUCT SIZES SHALL MATCH AIR INLET/OUTLET NECK SIZE UON.

DEMOLITION NOTES

1. ALL DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS.
2. THE CONTRACTOR SHALL FIELD SURVEY THE EXISTING CONDITIONS PRIOR TO STARTING ANY WORK.
3. DURING DEMOLITION, THE CONTRACTOR SHALL ALWAYS BE AWARE OF THE INTENDED FINAL RENOVATED CONDITIONS OF THE BUILDING AND THE REASON OF DEMOLITION WORK IS BEING DONE.
4. THE CONTRACTOR SHALL RESTORE TO ITS EXISTING CONDITION ANY EXISTING WORK DAMAGED DURING DEMOLITION INDICATED "EXISTING TO REMAIN" ON THE DRAWINGS.
5. THE CONTRACTOR SHALL TURN OVER ALL DEMOLISHED EQUIPMENT AND MATERIALS, OR DISPOSE AS DIRECTED BY THE OWNER. CONTRACTOR SHALL INCLUDE ANY DISPOSAL FEE AS REQUIRED AS PART OF BASE BID.
6. PROVIDE TEMPORARY ENCLOSURE/PROTECTION/BARRICADES OR WARNING WHERE REQUIRED BY APPLICABLE SAFETY ORDINANCES PRIOR TO START OF DEMOLITION. REMOVE WHEN NO LONGER NEEDED.
7. CONTRACTOR SHALL DEMOLISH AS REQUIRED TO PROVIDE THE NEW LAYOUT ON THIS PLAN.
8. DEMOLISH ALL SERVICES BACK TO MAIN AND CAP AS APPLICABLE.

CODES AND STANDARDS

CODES

- CALIFORNIA CODE OF REGULATIONS (CCR)
- TITLE 19: STATE FIRE MARSHAL REGULATIONS
- TITLE 20: CALIFORNIA CODE OF REGULATIONS
- TITLE 24: CALIFORNIA BUILDING STANDARDS CODE
  - ■ PART 1: 2019 CALIFORNIA ADMINISTRATIVE CODE (CAC)
  - ■ PART 2: 2019 CALIFORNIA BUILDING CODE (CBC)
  - ■ PART 3: 2019 CALIFORNIA ELECTRICAL CODE (CEC)
  - ■ PART 4: 2019 CALIFORNIA MECHANICAL CODE (CMC)
  - ■ PART 5: 2019 CALIFORNIA PLUMBING CODE (CPC)
  - ■ PART 6: 2019 CALIFORNIA ENERGY CODE
  - ■ PART 9: 2019 CALIFORNIA FIRE CODE (CFC)
  - ■ PART 12: 2019 CALIFORNIA REFERENCED STANDARDS

STANDARDS

- AMERICAN SOCIETY OF HEATING, REFRIGERATING & AIR CONDITIONING ENGINEERS (ASHRAE) HANDBOOKS AND STANDARDS:
  - ○ ASHRAE 2019 HANDBOOK, HVAC APPLICATIONS
  - ○ ASHRAE 2020 HANDBOOK, HVAC SYSTEMS AND APPLICATIONS
  - ○ ASHRAE 2021 HANDBOOK, FUNDAMENTALS
  - ○ ASHRAE 2018 HANDBOOK, REFRIGERATION
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) STANDARDS
- SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) STANDARDS
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CODES AND STANDARDS
  - ○ NFPA 13: STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, 2019
  - ○ NFPA 10: STANDARD FOR PORTABLE FIRE EXTINGUISHER, 2018
  - ○ NFPA 25: STANDARD FOR THE INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS, 2017
  - ○ NFPA 70: NATIONAL ELECTRICAL CODE (NEC), 2017
  - ○ NFPA 72: NATIONAL FIRE ALARM AND SIGNALING CODE, 2019
  - ○ NFPA 101: LIFE SAFETY CODE, 2012
  - ○ NFPA 110: STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS, 2019
  - ○ NFPA 111: STANDARD ON STORED ELECTRICAL ENERGY EMERGENCY AND STANDBY POWER SYSTEMS, 2019
- OCCUPATIONAL SAFETY AND HEALTH ASSOCIATION (OSHA)
- ENVIRONMENTAL PROTECTION AGENCY (EPA)
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
- UNDERWRITERS LABORATORY (UL)

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RESPONSIBILITY MATRIX

RESPONSIBILITY MATRIX

THIS SCHEDULE IS PROVIDED FOR QUICK REFERENCE ONLY.
THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL WORK DESCRIBED IN THE CONSTRUCTION DOCUMENTS.
CONFLICTS BETWEEN THIS SCHEDULE AND THE REST OF THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION PRIOR TO BEGINNING WORK.

DESCRIPTION	FURNISHED			INSTALLED			REMARKS
	GENERAL CONTRACTOR	OWNER	LANDLORD	GENERAL CONTRACTOR	OWNER	LANDLORD	
DIVISION 23: HEATING, VENTILATING, AND AIR CONDITIONING							
23.1 HVAC DUCTWORK AND PIPING IDENTIFICATION							
23.1.1 HVAC DUCTWORK SYSTEM IDENTIFICATION	●			●			
23.1.2 PIPING SYSTEM IDENTIFICATION	●			●			
23.1.3 UTILITY SHUT OFF IDENTIFICATION IN KITCHEN	●			●			
23.1.4 VALVE TAGS AND CHART	●			●			
23.1.5 HVAC DAMPER IDENTIFICATION	●			●			
23.2 ROOF CURBS							
23.2.1 ROOFTOP UNIT CURBS							GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.2.2 CONDENSING UNIT CURBS	●			●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.2.3 MAKE UP AIR AND DOAS UNIT CURBS							GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.2.4 KITCHEN EXHAUST FAN CURBS							GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.3 HVAC DUCTWORK SYSTEM COMPONENTS							
23.3.1 HVAC DUCTWORK	●			●			
23.3.2 INSULATION AND FIRE WRAP	●			●			GENERAL CONTACTOR SCOPE OF WORK TO INCLUDE TENANT FIT OUT FROM LANDLORD POINT OF CONNECTION
23.3.3 DAMPERS	●			●			
23.3.4 SMOKE DETECTORS	●			●			
23.3.5 SUPPLY, RETURN, AND EXHAUST GRILLS AND REGISTERS	●			●			
23.4 MECHANICAL PIPING SYSTEM COMPONENTS							
23.4.1 WALK-IN COOLER AND FREEZER REFRIGERATION		●			●		WALK-IN COOLER AND FREEZER SUPPLIED BY VENDOR NO. 27 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE PIPING INSTALLATION AND FINAL CONNECTION
23.4.2 REFRIGERATION FOR OTHER HVAC EQUIPMENT	●			●			
23.4.3 VALVES AND ACCESSORIES (E.G. AIR VENTS)	●			●			
23.5 HVAC EQUIPMENT							GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING FOR ALL ROOFTOP EQUIPMENT
23.5.1 TOILET EXHAUST FAN	●			●			
23.5.2 KITCHEN EXHAUST FAN		●		●			SUPPLIED BY VENDOR NO. 26
23.5.3 DUCTED HEATING AND COOLING UNITS	●			●			
23.5.4 MAKE UP AIR AND DOAS UNITS		●		●			SUPPLIED BY VENDOR NO. 26
23.5.5 REFRIGERATION CONDENSING UNITS		●		●			
23.5.6 RGF PHI SYSTEM	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 12 VENDOR SUBSTITUTION IS NOT PERMITTED
23.6 KITCHEN EXHAUST WITH FIRE SUPPRESSION SYSTEM							
23.6.1 HOOD CONTROL PANEL		●		●			SUPPLIED BY VENDOR NO. 26
23.6.2 KITCHEN EXHAUST HOOD		●		●			SUPPLIED BY VENDOR NO. 26
23.6.3 STRUCTURAL SUPPORT	●			●			
23.6.4 ELECTRICAL AND CONTROL WIRING	●			●			
23.6.5 ANSUL SYSTEM		●		●			SUPPLIED BY VENDOR NO. 26 GENERAL CONTRACTOR TO COORDINATE AND FACILITATE SYSTEM SIGN-OFF
23.6.6 ANSUAL WIRING AND UTILITIES CONNECTION	●			●			
23.6.7 ANSUAL GAS VALVE		●		●			SUPPLIED BY VENDOR NO. 26
23.7 COMMISSIONING ACTIVITIES							
23.7.1 GREASE EXHAUST WATER LEAKAGE TEST	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 10 VENDOR SUBSTITUTION IS NOT PERMITTED
23.7.2 TESTING AIR BALANCE (TAB) REPORT	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 12 VENDOR SUBSTITUTION IS NOT PERMITTED

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STORE NO:
CA #1398

SHAKE SHACK
SHAKE SHACK - KOREATOWN
3786 WILSHIRE BLVD. LOS ANGELES, CA 90010

△	DATE	DESCRIPTION
	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS:
PERMIT/BID SET

PRELIMINARY:
Preliminary Documents Are for Design Review only and not inteded for bidding, negotiating, permitting or construction purposes. They were prepared by or under the supervision of Zebra Projects, INC.

OTHON ESTRADA, JR.
M36244

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL - NOTES, SYMBOLS AND ABBREVIATIONS

DATE: 11/05/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: As indicated

SHEET NO:
M001

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 7 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

[1] FOOTNOTES: System CFM should include both mechanical and natural ventilation for the zone/system.
[2] Air filtration requirements apply to the following three system types per §120.1(c)14: space conditioning systems utilizing ducts to supply air to occupiable space; supply-only ventilation systems providing outside air to occupiable space; supply side of balanced ventilation systems including heat recovery and energy recovery ventilation systems providing outside air to occupiable space.
[3] Uniform Mechanical Code may have more stringent ventilation requirements; the most stringent code requirement takes precedence.
[4] See Standards Tables 120.1-A and 120.1-B.
[5] For lecture halls with fixed seating, the expected number of occupants shall be determined in accordance with the California Building Code.
[6] §120.2(e)3 requires systems serving rooms that are required by §130.1(c) to have lighting occupancy sensing controls to also have occupancy sensing zone controls for ventilation. Examples of spaces which require lighting occupancy sensors include offices 250ft² or smaller, multipurpose rooms less than 1,000ft², classrooms, conference rooms, restrooms, aisles and open areas in warehouses, library book stack aisles, corridors, stairwells, parking garages, and loading and unloading zones, unless excepted by §130.1(c).

K. TERMINAL BOX CONTROLS

This Section Does Not Apply

L. DISTRIBUTION (DUCTWORK AND PIPING)

Table Instructions: Complete the following tables to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(l) for duct leakage testing.

Duct Leakage Sealing

The answers to the questions below apply to the following duct system(s):		Fan Coil Ductwork	Duct leakage testing triggered for these systems?	No
11	No	The scope of the project includes only duct systems serving healthcare facilites.		
12	No	Duct system provides conditioned air to an occupiable space for a constant volume, single zone, space-conditioning system.		
13	Yes	The space conditioning system serves less than 5,000 ft² of conditioned floor area.		
14	Yes	The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:		
	☐	Outdoors		
	☐	In a space directly under a roof that has a U-factor greater than the U-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1f.ii or if the roof has fixed vents or openings to the outside/ unconditioned spaces		
	☐	In an unconditioned crawlspace		
	☑	In other unconditioned spaces		
15	No	The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.		
16	No	The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2.		

Table Continued

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 8 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

Table Continued

17		Duct system shall be sealed in accordance with the California Mechanical Code.

M. COOLING TOWERS

This Section Does Not Apply

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

YES	NO	Form/Title	Systems To Be Field Verified	Field Inspector	
				Pass	Fail
◉		NRCI-MCH-01-E - Must be submitted for all buildings.		☐	☐

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 9 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/

YES	NO	Form/Title	Systems To Be Field Verified	Field Inspector	
				Pass	Fail
◉	○	NRCA-MCH-02-A Outdoor Air must be submitted for all newly installed HVAC units. *Note: MCH02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap.*		☐	☐
○	◉	NRCA-MCH-03-A Constant Volume Single Zone HVAC *NOTE: This form does not automatically move to "Yes". If Constant Volume Single Zone HVAC Systems are included in the scope, permit applicant should move this form to "Yes".*		☐	☐
○	◉	NRCA-MCH-04-A Air Distribution Duct Leakage		☐	☐
○	◉	NRCA-MCH-05-A Air Economizer Controls		☐	☐
○	◉	NRCA-MCH-06-A Demand Control Ventilation Systems Acceptance must be submitted for all systems required to employ demand controlled ventilation (refer to §120.1(c)3) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints.		☐	☐
◉	○	NRCA-MCH-07-A Supply Fan Variable Flow Controls		☐	☐
○	◉	NRCA-MCH-08-A Valve Leakage Test		☐	☐
○	◉	NRCA-MCH-09-A Supply Water Temperature Reset Controls		☐	☐
○	◉	NRCA-MCH-10-A Hydronic System Variable Flow Controls		☐	☐
○	◉	NRCA-MCH-11-A Automatic Demand Shed Controls		☐	☐

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
EF-1	Exhaust	1	300	BHP	0.07	Fully ducted return/ exhaust	300
						Calculated Adjustment (in H_2O)	

Total System Design Supply Airflow (CFM):	300	Total System Design (B)HP:	0.07	**Maximum System Fan Power (B)HP:**	
System Name: Outside Air Fan	**Economizer:**[1]	NA: ≤ 54 kBtu/h cooling	**Economizer Controls:**	**System Fan Type:**	Constant Volume

01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
OA-1	Supply	1	1,100	BHP	0.15	None used	
						Calculated Adjustment (in H_2O)	

Total System Design Supply Airflow (CFM):	1,100	Total System Design (B)HP:	0.15	**Maximum System Fan Power (B)HP:**	
System Name: Fan Coil	**Economizer:**[1]	NA: ≤ 54 kBtu/h cooling	**Economizer Controls:**	**System Fan Type:**	Variable Air Volume

01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
FC-1.1, FC-1.2	Supply	2	1,177	BHP	0.2	None used	
						Calculated Adjustment (in H_2O)	

Table Continued

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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Table Continued

Total System Design Supply Airflow (CFM):	2,354	Total System Design (B)HP:	0.4	**Maximum System Fan Power (B)HP:**	
System Name: Fan Coil	**Economizer:**[1]	NA: ≤ 54 kBtu/h cooling	**Economizer Controls:**	**System Fan Type:**	Variable Air Volume

01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
FC-2.1, 2.2, 2.3	Supply	3	1,130	BHP	0.2	None used	
						Calculated Adjustment (in H_2O)	

Total System Design Supply Airflow (CFM):	3,390	Total System Design (B)HP:	0.6	**Maximum System Fan Power (B)HP:**	
System Name: Fan Coil	**Economizer:**[1]	NA: ≤ 54 kBtu/h cooling	**Economizer Controls:**	**System Fan Type:**	Variable Air Volume

01	02	03	04	05	06	07	08
Fan Name or Item Tag	Fan Function	Qty	Maximum Design Supply Airflow (CFM)	HP Unit[2]	Design HP	Fan Power Pressure Drop Adjustment - Table 140.4-B	
						Device	Design Airflow through Device (CFM)
FC-3.1	Supply	1	646	Nameplate HP	0.15		
						Calculated Adjustment (in H_2O)	

Total System Design Supply Airflow (CFM):	646	Total System Design (B)HP:	0.15	**Maximum System Fan Power (B)HP:**	

[1] FOOTNOTE: Computer room economizers must meet requirements of §140.9(a) and will be documented on the NRCC-PRC-E document.
[2] The unit used for HP must be consistent for all fans within a system.

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 6 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

I. SYSTEM CONTROLS

Table Instructions: Complete the following Table to demonstrate compliance with mandatory controls in §110.2 and §120.2 and prescriptive controls in §140.4(f) and (n) or requirements in §141.0(b)2E for altered space conditioning systems.

01	02	03	04	05	06	07	08	09
System Name	System Zoning	Conditioned Floor Area Being Served (ft²)	Thermostats §110.2(b) & (c)[1], §120.2(a) or §141.0(b)2E	Shut-Off Controls §120.2(e)	Isolation Zone Controls §120.2(e)	Demand Response §110.12 and §120.2(b)	Supply Air Temp. Reset §140.4(f)	Window Interlocks per §140.4(n)
Fan Coil Units	single zone	≤ 25,000 ft²	Setback Thermostat	NA: 7 day per §120.2(e)1	NA: Single Zone	DR Tstat per §110.12	NA: Single Zone	NA: Auto-closing doors

[1] FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.
** NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.*
EX: System 1: SA Temp Reset: Exempt because zones compliant with §140.4(d); EXCEPTION 1 to §140.4(f)

J. VENTILATION AND INDOOR AIR QUALITY

Table Instructions: Complete the following Table to demonstrate compliance with mandatory ventilation requirements in §120.1 and §120.2(e)3& for all nonresidential, high-rise residential and hotel/motel occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet.

01	☑	Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.
02	☐	Check this box if the project includes Nonresidential or Hotel/Motel spaces
	☐	Check this box if the project includes new or altered high-rise residential dwelling units
03	☐	Check the box if the project is using natural ventilation in any spaces to meet required ventilation rates per §120.1(c)2.

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 1 of 13
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This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.

A. GENERAL INFORMATION

01	Project Location (city)	LOS ANGELES	04	Total Conditioned Floor Area	2,350
02	Climate Zone	8	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	20

☐ Office (B) ☑ Retail (M) ☐ Non-refrigerated Warehouse (S)
☐ Hotel/ Motel Guest Rooms (R-1) ☐ School (E) ☐ Healthcare Facility (I)
☐ High-Rise Residential (R-2/R-3) ☐ Relocatable Class Bldg (E) ☐ Other (Write In):

[1] *FOOTNOTES: Climate zone can be determined on the California Energy Commission's website at http://www.energy.ca.gov/maps/renewable/building_climate_zones.html*

B. PROJECT SCOPE

Table Instructions: Include any mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)2 for alterations.

My project consists of (check all that apply)

01 Air System(s)	02 Wet System Components	03 Dry System Components
☑ Heating Air System	☐ Water Economizer	☐ Air Economizer
☑ Cooling Air System	☐ Pumps	☐ Electric Resistance Heat
☐ Mechanical Controls	☐ Hydronic System Piping	☑ Fan Systems
☑ Mechanical Controls (existing to remain, altered or new)	☐ Cooling Towers	☑ Ductwork (existing to remain, altered or new)
	☐ Chillers	☑ Ventilation
	☐ Boilers	☐ Zonal Systems/ Terminal Boxes

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

01 System Summary §110.1, §110.2, §140.4	AND	02 Pumps §140.4(k)	AND	03 Fans/ Economizers §140.4(c), §140.4(e)	AND	04 System Controls §110.2, §120.2, §140.4(f)	AND	05 Ventilation §120.1	AND	06 Terminal Box Controls §140.4(d)	AND	07 Distribution §120.3, §140.4(l)	AND	08 Cooling Towers §110.2(e)2	09 Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND		AND	Yes	AND	Yes	AND	Yes	AND		AND	Yes	AND		COMPLIES
															Mandatory Measures Compliance (See Table Q for Details) COMPLIES

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
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D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

Table H indicates a Fan Power System Index that exceeds the maximum allowed per §140.4(c). Please revise to demonstrate compliance.
Selections made in Table O have been changed by the permit applicant. See Table E. Additional Remarks for permit applicant's explanation.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Table Instructions: Complete the following equipment schedules to show compliance with mandatory requirements found in §110.1 and §110.2(a) and prescriptive requirements found in §140.4(a), §140.4(b) and §140.4(k) or §141.0(b)2 for alterations.

Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)

01	02	03	04	05	06	07	08	09	10	11
Name or Item Tag	Equipment Category per Tables 110.2	Equipment Type per Tables 110.2 & Title 20	Smallest Size Available[1] §140.4(a)	Equipment Sizing per Mechanical Schedule (kBtu/h) §140.4 (a&b)						
				Heating Output[2,3]			Cooling Output[2,3]		Load Calculations[3,4]	
				Per Design (kBtu/h)	Rated (kBtu/h)	Supp. Heating Output (kBtu/h)	Sensible Per Design (kBtu/h)	Rated (kBtu/h)	Total Heating Load (kBtu/h)	Total Sensible Cooling Load (kBtu/h)
CU-1	Variable Refrigerant Flow	VRF heat pump, air cooled	Yes	135	135	135	119.7	119.7	130	115
CU-2	Variable Refrigerant Flow	VRF heat pump, air cooled	Yes	135	135	135	119.7	119.7	130	115
CU-3	Variable Refrigerant Flow	VRF air conditioners, air cooled	Yes	18.5	18.5	18	30	30	15	25

Table Continued

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 3 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

Table Continued

[1] FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per §140.4(a). Healthcare facilities are excepted.
[2] It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.
[3] If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.
[4] Authority Having Jurisdiction may ask for load calculations used for compliance per §140.4(b).

Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP))

01	02	03	04	05	06	07	08	09
Name or Item Tag	Size Category (Btu/h)	Heating Mode				Cooling Mode		
		Rating Condition (°F)	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency	Efficiency Unit	Min Efficiency Required per Tables 110.2/ Title 20	Design Efficiency
CU-1	≥65,000 and <135,000	47°Fdb/43°Fwb OSA	COP	3.3	3.95	EER	11	12.2
						IEER	14.6	22.3
CU-2	≥65,000 and <135,000	47°Fdb/43°Fwb OSA	COP	3.3	3.95	EER	11	12.2
						IEER	14.6	22.3
CU-3	<65,000					SEER	13	19.8

G. PUMPS

This Section Does Not Apply

H. FAN SYSTEMS & AIR ECONOMIZERS

Table Instructions: Complete the following Table for fan systems to demonstrate compliance with prescriptive requirements found in §140.4(c), §140.4(e) and §140.4(m). First document the system details, then add fans within that system to document compliance with fan power requirements. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

System Name:	Exhaust Fan	**Economizer:**[1]	NA: ≤ 54 kBtu/h cooling	**Economizer Controls:**		**System Fan Type:**	Constant Volume

Table Continued

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STORE NO:
CA #1398

SHAKE SHACK
SHAKE SHACK - KOREATOWN
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REVISION

△	DATE	DESCRIPTION
	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS:
PERMIT/BID SET

PRELIMINARY:
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REGISTERED PROFESSIONAL ENGINEER
CHRISTINA ESTRADA
M36244
MECHANICAL
STATE OF CALIFORNIA

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL TITLE 24 FORMS

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: 12" = 1'-0"

SHEET NO:
M002

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 13 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	SAMANTHA KELLEY	Documentation Author Signature:	
Company:	INFRASTRUCTURE FACTOR CONSULTING INC.	Signature Date:	11/3/21
Address:	2361 ROSECRANS AVE	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	EL SEGUNDO/CALIFORNIA/90245	Phone:	(310) 725-1500

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.

2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)

3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.

4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name:	OTHON ESTRADA	Responsible Designer Signature:	
Company :	INFRASTRUCTURE FACTOR CONSULTING INC.	Date Signed:	11/3/21
Address:	2361 ROSECRANS AVE	License:	M36244
City/State/Zip:	EL SEGUNDO/CALIFORNIA/90245	Phone:	(310) 725-1500

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 09/2020)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 10 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

○	◉	NRCA-MCH-12-A FDD for Packaged Direct Expansion Units		☐	☐
○	◉	NRCA-MCH-13-A Automatic FDD for Air Handling Units and Zone Terminal Units Acceptance		☐	☐
○	◉	NRCA-MCH-14-A Distributed Energy Storage DX AC Systems Acceptance *NOTE: This form does not automatically move to "Yes". If Distributed Energy Storage DX AC Systems are included in the scope, permit applicant should move this form to "Yes".*		☐	☐
○	◉	NRCA-MCH-15-A Thermal Energy Storage (TES) System Acceptance *NOTE: This form does not automatically move to "Yes". If Chilled Water Storage, Ice-on-Coil Internal Melt, Ice-on-Coil External Melt, Ice Harvester, Brine, Ice-Slurry, Eutectic Salt, Clathrate Hydrate Slurry (CHS), Cryogenic or Encapulated (Ice Ball) Systems are included in the scope, permit applicant should move this form to "Yes".*		☐	☐
○	◉	NRCA-MCH-16-A Supply Air Temperature Reset Controls		☐	☐
○	◉	NRCA-MCH-17-A Condenser Water Temperature Reset Controls		☐	☐
○	◉	NRCA-MCH-18 Energy Management Control Systems		☐	☐
○	◉	NRCA-MCH-19 Occupancy Sensor Controls		☐	☐
○	◉	NRCA-MCH-20 Multi-Family Ventilation		☐	☐
○	◉	NRCA-MCH-21 Multi-Family Envelope Leakage		☐	☐

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 09/2020)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 11 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be completed by a HERS Rater and provided to the building inspector during construction. The final documents must be created by a HERS Providers registry, but drafts can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCV/

YES	NO	Form/Title	Field Inspector	
			Pass	Fail
○	◉	NRCV-MCH-04-H Duct Leakage Test *NOTE: Must be completed by a HERS Rater*	☐	☐
○	◉	NRCV-MCH-24 Enclosure Air Leakage Worksheet *NOTE: Must be completed by a HERS Rater*	☐	☐
○	◉	NRCV-MCH-27 High-rise Residential *NOTE: Must be completed by a HERS Rater*	☐	☐
○	◉	NRCV-MCH-32 Local Mechanical Exhaust *NOTE: Must be completed by a HERS Rater*	☐	☐

STATE OF CALIFORNIA
Mechanical Systems
NRCC-MCH-E (Created 09/2020)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-MCH-E
Project Name: SHAKE SHACK KOREA TOWN	Report Page:	Page 12 of 13
Project Address: 3786 WILSHIRE AVENUE, LOS ANGELES, CA 90010	Date Prepared:	11/02/2021

Q. MANDATORY MEASURES DOCUMENTATION LOCATION

Table Instructions: Indicate where mandatory measures are documented in the plan set or construction documentation. For any mandatory measures that do not apply, mark the plan sheet or construction document location as "N/A", any active cells that are left blank will result in non-compliance in Table C.

01		02
		Plan sheet or construction document location
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block:	Yes	M001

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REVISION

△	DATE	DESCRIPTION
	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS:
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REGISTERED PROFESSIONAL ENGINEER
OTHON ESTRADA JR.
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FIELD VERIFICATION:
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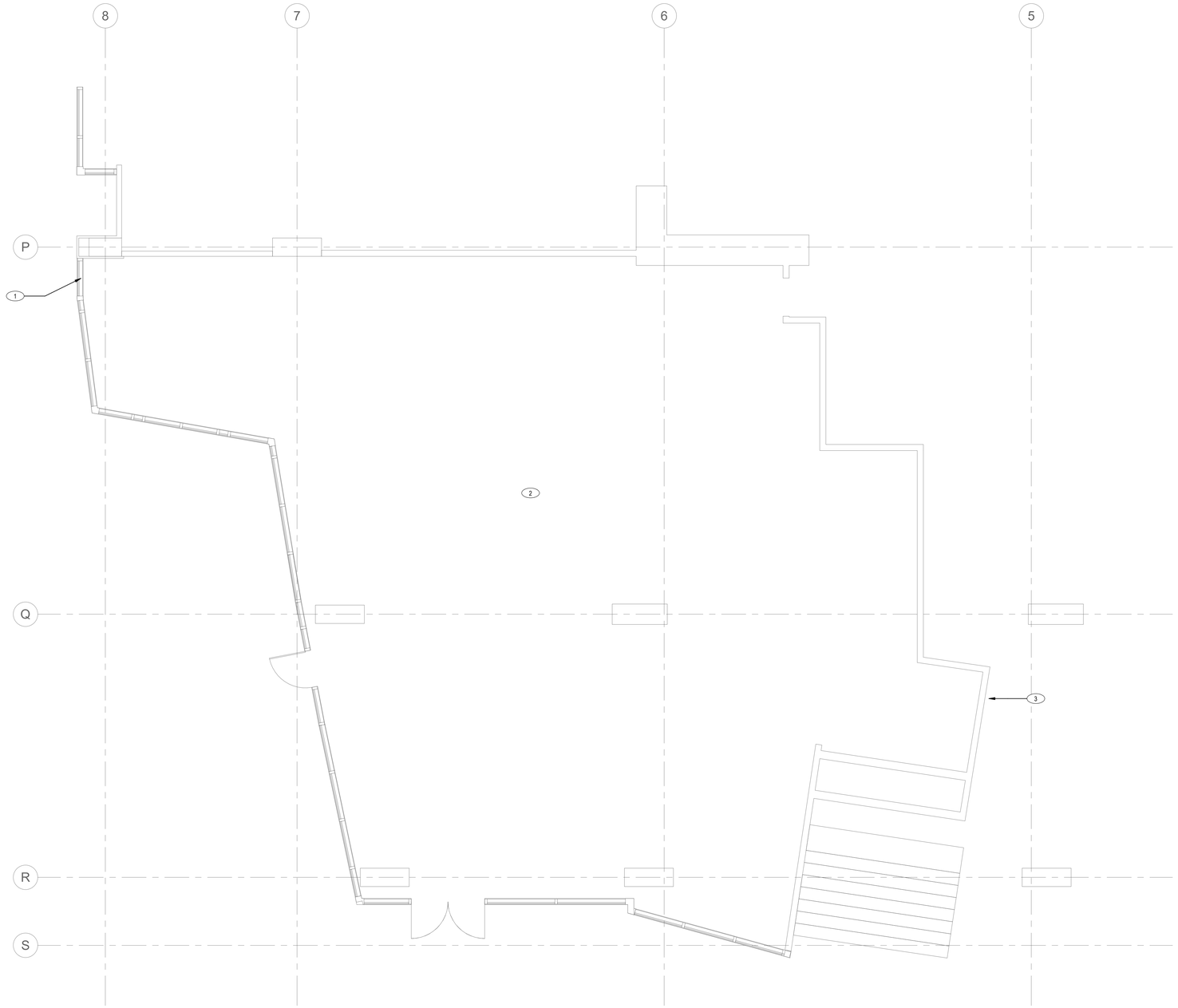
SHEET NAME:
MECHANICAL TITLE 24 FORMS

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: 12" = 1'-0"

SHEET NO:
M003



MECHANICAL OVERALL DEMOLITION 1ST FLOOR PLAN 1

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

DEMOLITION KEY NOTES

1 EXISTING LOUVER TO BE DEMOLISHED AND CAP TO MATCH EXISTING EXTERIOR FINISH. COORDINATE WITH ARCHITECT FOR FINAL FINISH LOOK.

2 ALL EXISTING MECHANICAL PIPING, DUCTWORK, EQUIPMENT, AIR TERMINALS, ETC., TO BE DEMOLISHED.

3 EXISTING LOUVER FOR RESTROOM EXHAUST TO BE PRESERVED AND PROTECTED IN PLACE FOR REUSE.

DEMOLITION NOTES

1. ALL DEMOLITION SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS.
2. THE CONTRACTOR SHALL FIELD SURVEY THE EXISTING CONDITIONS PRIOR TO STARTING ANY WORK.
3. DURING DEMOLITION, THE CONTRACTOR SHALL ALWAYS BE AWARE OF THE INTENDED FINAL RENOVATED CONDITIONS OF THE BUILDING AND THE REASON OF DEMOLITION WORK IS BEING DONE.
4. THE CONTRACTOR SHALL RESTORE TO ITS EXISTING CONDITION ANY EXISTING WORK DAMAGED DURING DEMOLITION INDICATED "EXISTING TO REMAIN" ON THE DRAWINGS.
5. THE CONTRACTOR SHALL TURN OVER ALL DEMOLISHED EQUIPMENT AND MATERIALS, OR DISPOSE AS DIRECTED BY THE OWNER. CONTRACTOR SHALL INCLUDE ANY DISPOSAL FEE AS REQUIRED AS PART OF BASE BID.
6. PROVIDE TEMPORARY ENCLOSURE/PROTECTION/BARRICADES OR WARNING WHERE REQUIRED BY APPLICABLE SAFETY ORDINANCES PRIOR TO START OF DEMOLITION. REMOVE WHEN NO LONGER NEEDED.
7. CONTRACTOR SHALL DEMOLISH AS REQUIRED TO PROVIDE THE NEW LAYOUT ON THIS PLAN.
8. DEMOLISH ALL SERVICES BACK TO MAIN AND CAP AS APPLICABLE.

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REVISION

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1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS:
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REGISTERED PROFESSIONAL ENGINEER
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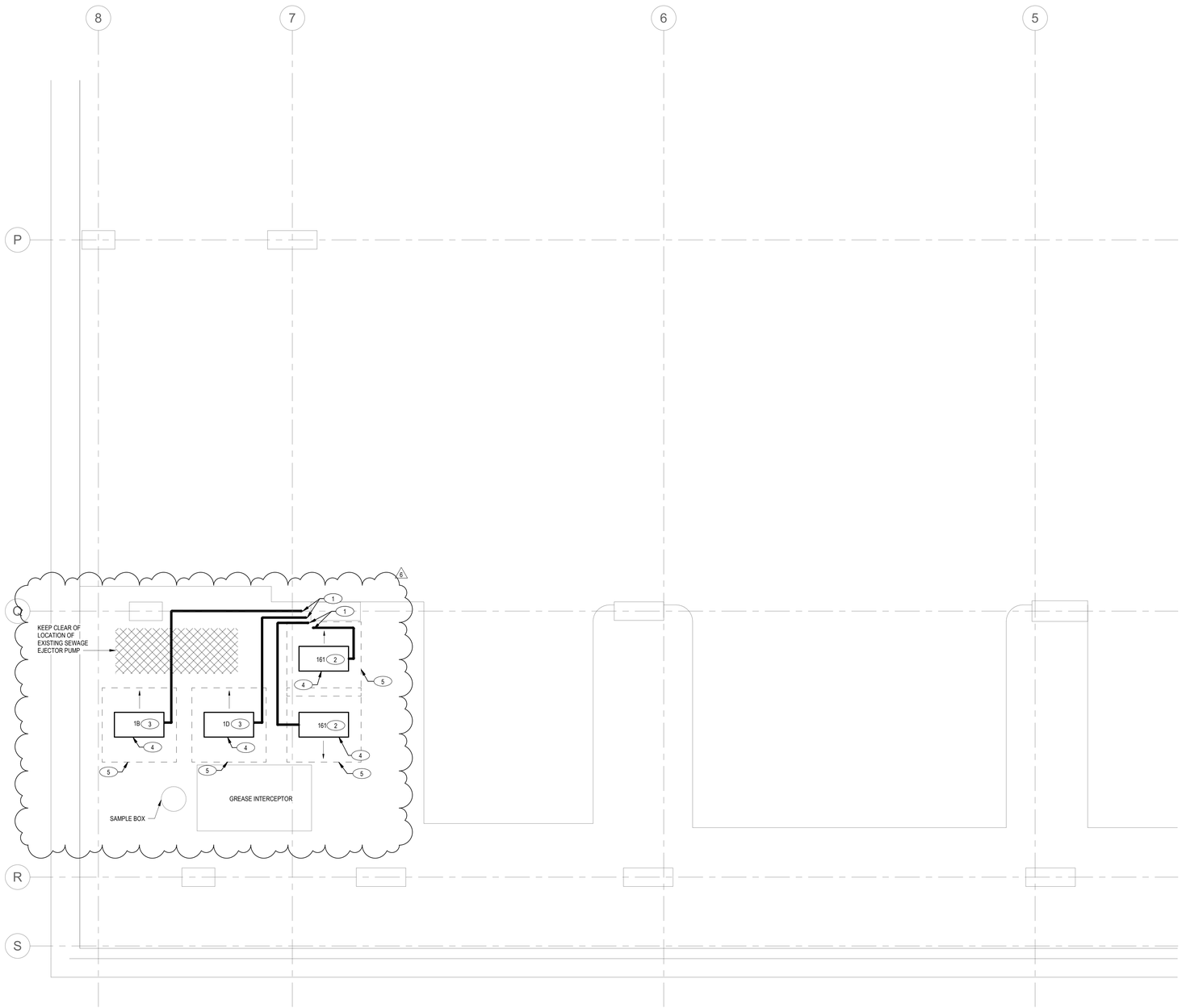
STATE OF CALIFORNIA

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL OVERALL DEMOLITION 1ST FLOOR PLAN

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: 1/4" = 1'-0"

SHEET NO:
M111



MECHANICAL REMODEL GARAGE LEVEL BASEMENT PLAN 1

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

RENOVATION KEY NOTES

1 REFRIGERATION PIPING ROUTED UP TO LEVEL ONE RESTAURANT SPACE THROUGH NEW PIPE CHASE. PROVIDE JACKETING ON ALL REFRIGERATION LINES. CONTRACTOR TO CONFIRM EXACT ROUTING IN FIELD AND COORDINATE WITH ARCHITECT AND LANDLORD.
2 CUSTARD MACHINE CONDENSING UNIT BY OTHERS.
3 COOLER/FREEZER CONDENSING UNITS BY OTHERS.
4 OWNER FURNISHED EQUIPMENT, AND CONTRACTOR INSTALLED CONDENSING UNIT. REFER TO KITCHEN DRAWINGS. COORDINATE HOUSEKEEPING PADS WITH STRUCTURAL ENGINEER. MINIMUM 4" THICK PAD.
5 SERVICE CLEARANCE FOR CONDENSING UNITS. SERVICE CLEARANCES MAY OVERLAP, BUT NO EQUIPMENT MAY BE PLACED WITHIN THE AREA.

GENERAL NOTES

1 WHERE ENCLOSURES ARE NOT REQUIRED, HOODS, GREASE REMOVAL DEVICES, EXHAUST FANS, AND DUCTS SHALL HAVE A CLEARANCE OF NOT LESS THAN 18" TO COMBUSTIBLE MATERIAL, 6" TO LIMITED-COMBUSTIBLE MATERIAL, AND 0" TO NONCOMBUSTIBLE MATERIAL PER ALL APPLICABLE CODE SECTIONS.
2 PROVIDE MANUAL BALANCING DAMPER FOR ALL BRANCH DUCTWORK FOR PROPER BALANCING OF ALL AIR SYSTEMS, WHETHER SHOWN ON DRAWINGS OR NOT.
3 SEE SHEET M501 FOR PIPING DIAGRAM DETAIL.
4 ENVIRONMENTAL EXHAUST OUTLETS SHALL TERMINATE NO LESS THAN 3' FROM PROPERTY LINE, 3' FROM OPENINGS INTO THE BUILDING AND 10' FROM ANY FORCED AIR INTAKE.
5 OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM LESS THAN 10' IN DISTANCE FROM AN APPLIANCE VENT OUTLET, A VENT OPENING OF A PLUMBING DRAINAGE SYSTEM, THE DISCHARGE OUTLET OF AN EXHAUST FAN, OR A MEDICAL-SURGICAL VACUUM OUTLET UNLESS THE OUTLET IS 3' ABOVE THE OUTSIDE-AIR INLET.
6 510.7.3 CLEARANCE. CLEARANCE FROM THE DUCT OR THE EXHAUST FAN TO THE INTERIOR SURFACE OF ENCLOSURES OF COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 18 INCHES (457 MM), AND CLEARANCE FROM THE DUCT TO THE INTERIOR SURFACE OF ENCLOSURES OF NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 6 INCHES (152 MM). PROVISIONS FOR REDUCING CLEARANCES AS DESCRIBED IN SECTION 507.4 THROUGH SECTION 507.4.3.3 SHALL NOT BE APPLICABLE TO ENCLOSURES. [NFPA 96:7.7.2.2.1 - 7.7.2.2.3]. EXCEPTION: CLEARANCE FROM THE OUTER SURFACES OF FIELD APPLIED GREASE DUCT ENCLOSURES AND FACTORY-BUILT GREASE DUCT ENCLOSURES TO THE INTERIOR SURFACES OF CONSTRUCTION INSTALLED AROUND THEM SHALL BE PERMITTED TO BE REDUCED WHERE THE FIELD-APPLIED GREASE DUCT ENCLOSURE MATERIALS AND THE FACTORY-BUILT GREASE DUCT ENCLOSURES ARE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THE LISTINGS AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ARE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. [NFPA 96:7.7.2.2.4]

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REVISION

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	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4
6	10/11/22	REVISION 6

STATUS:
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REGISTERED PROFESSIONAL ENGINEER
CHRIS ESTRADA
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STATE OF CALIFORNIA

FIELD VERIFICATION:
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SHEET NAME:
MECHANICAL BASEMENT REMODEL PLAN

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: 1/4" = 1'-0"

SHEET NO:
M201

MECHANICAL REMODEL LEVEL 01 REMODEL PLAN 1

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

RENOVATION KEY NOTES

1. KEEP SERVICE AREA CLEAR FOR OPERATION AND MAINTENANCE ACCESS. WHERE REQUIRED, PROVIDE ACCESS PANEL.
2. LOCATION OF MANUAL BALANCING VOLUME DAMPER. (TYP.)
3. PROVIDE SERVICE CLEARANCE TO SERVICE FILTERS.
4. ALL THERMOSTATS SERVING ALL FAN COIL UNITS TO BE LOCATED IN MANAGER'S OFFICE. COORDINATE WITH ARCHITECT FOR FINAL LOCATION.
5. TRANSFER AIR GRILLE FROM RESTROOM TO ADJACENT SPACE. SEE M701 REFRIGERANT VOLUME CALCULATION TABLE - NOTE 3.
6. SEE MANUFACTURER DETAILS FOR THE TRANSITION REQUIREMENTS. DUCT MUST BE GRADUALLY TRANSITIONED FOR OPTIMAL ODOR AND SMOKE CONTROL. PROPER AIR VELOCITY MUST BE MAINTANED.
7. 3 FOOT WIDE PLATFORM TO BE INSTALLED THE LENGTH OF THE UNIT TO PROVIDE MAINTENANCE. SEE STRUCTURAL DRAWINGS FOR INSTALLATION DETAILS.
8. DIRECTIONAL DIFFUSER TO BE INSTALLED TO BLOW AIR IN ONE DIRECTION PER FLOW ARROW.
9. INSTALL FILTER BOX AT INLET OF FAN COIL PER MANUFACTURER'S INSTRUCTIONS.
10. PROVIDE FILTER BOX WITH REAR INLET OPENING.
11. COORDINATE FINAL LOCATION OF REMOTE TEMPERATURE SENSORS WITH ARCHITECT.
12. DUCT SMOKE DETECTOR TO BE SUPERVISED BY FIRE ALARM SYSTEM.
13. PROVIDE WITH LOCHINVAR CONCENTRIC COMBUSTION AIR AND VENT PIPE TERMINATION KIT #100140480 FOR 3" DIAMETER MODEL. PROVIDE ONE KIT PER WATER HEATER. PROVIDE WITH MANUFACTURER RECOMMENDED RAIN CAP FOR VERTICAL DISCHARGE.
14. PER CALIFORNIA MECHANICAL CODE AND NFPA 96, GREASE DUCT SHALL HAVE A CLEARANCE OF NOT LESS THAN 18" TO COMBISTIBLE MATERIAL, 6" TO LIMITED-COMBUSTIBLE MATERIAL, AND 0" TO NONCOMBUSTIBLE MATERIAL. [NFPA 96:7.7.2]. PER BUILDING REQUIREMENTS, ALL MATERIALS IN PLENUM SPACE ARE NONCOMBUSTIBLE OR LIMITED COMBUSTIBLE. SEE SECTION DETAIL 1/M302 FOR ADDITIONAL INFORMATION. SEE ARCHITECTURAL SET FOR CONSTRUCTION DETAILS OF THE PLENUM. ALL PLENUM MATERIALS ARE OF NON-COMBUSTILBE OR LIMITED-COMBUSTIBLE CONSTRUCTION.
16. PROVISE ACCESS PANEL FOR SERVICING EXHAUST FAN.

GENERAL NOTES

1. WHERE ENCLOSURES ARE NOT REQUIRED, HOODS, GREASE REMOVAL DEVICES, EXHAUST FANS, AND DUCTS SHALL HAVE A CLEARANCE OF NOT LESS THAN 18" TO COMBUSTIBLE MATERIAL, 6" TO LIMITED-COMBUSTIBLE MATERIAL, AND 0" TO NONCOMBUSTIBLE MATERIAL PER ALL APPLICABLE CODE SECTIONS.
2. PROVIDE MANUAL BALANCING DAMPER FOR ALL BRANCH DUCTWORK FOR PROPER BALANCING OF ALL AIR SYSTEMS, WHETHER SHOWN ON DRAWINGS OR NOT.
3. SEE SHEET M501 FOR PIPING DIAGRAM DETAIL.
4. ENVIRONMENTAL EXHAUST OUTLETS SHALL TERMINATE NO LESS THAN 3' FROM PROPERTY LINE, 3' FROM OPENINGS INTO THE BUILDING AND 10' FROM ANY FORCED AIR INTAKE.
5. OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM LESS THAN 10' IN DISTANCE FROM AN APPLIANCE VENT OUTLET, A VENT OPENING OF A PLUMBING DRAINAGE SYSTEM, THE DISCHARGE OUTLET OF AN EXHAUST FAN, OR A MEDICAL-SURGICAL-VACUUM OUTLET UNLESS THE OUTLET IS 3' ABOVE THE OUTSIDE AIR INLET.
6. SAT 3 CLEARANCE. CLEARANCE FROM THE DUCT OR THE EXHAUST FAN TO THE INTERIOR SURFACE OF ENCLOSURES OF COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 18 INCHES (457 MM), AND CLEARANCE FROM THE DUCT TO THE INTERIOR SURFACE OF ENCLOSURES OF NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 6 INCHES (152 MM). PROVISIONS FOR REDUCING CLEARANCES AS DESCRIBED IN SECTION 507.4 THROUGH SECTION 507.4.3.3 SHALL NOT BE APPLICABLE TO ENCLOSURES. [NFPA 96:7.7.2.2.1 - 7.7.2.2.3]. EXCEPTION: CLEARANCE FROM THE OUTER SURFACES OF FIELD APPLIED GREASE DUCT ENCLOSURES AND FACTORY-BUILT GREASE DUCT ENCLOSURES TO THE INTERIOR SURFACES OF CONSTRUCTION INSTALLED AROUND THEM SHALL BE PERMITTED TO BE REDUCED WHERE THE FIELD-APPLIED GREASE DUCT ENCLOSURE MATERIALS AND THE FACTORY-BUILT GREASE DUCT ENCLOSURES ARE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THE LISTINGS AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ARE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. [NFPA 96:7.7.2.2.4]

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REVISION

	DATE	DESCRIPTION
D	04/04/22	REVISION D
1	07/01/22	REVISION 1
	08/23/22	SK001
4	09/16/22	REVISION 4
5	10/19/22	REVISION 5
6	10/11/22	REVISION 6

STATUS: PERMIT/BID SET

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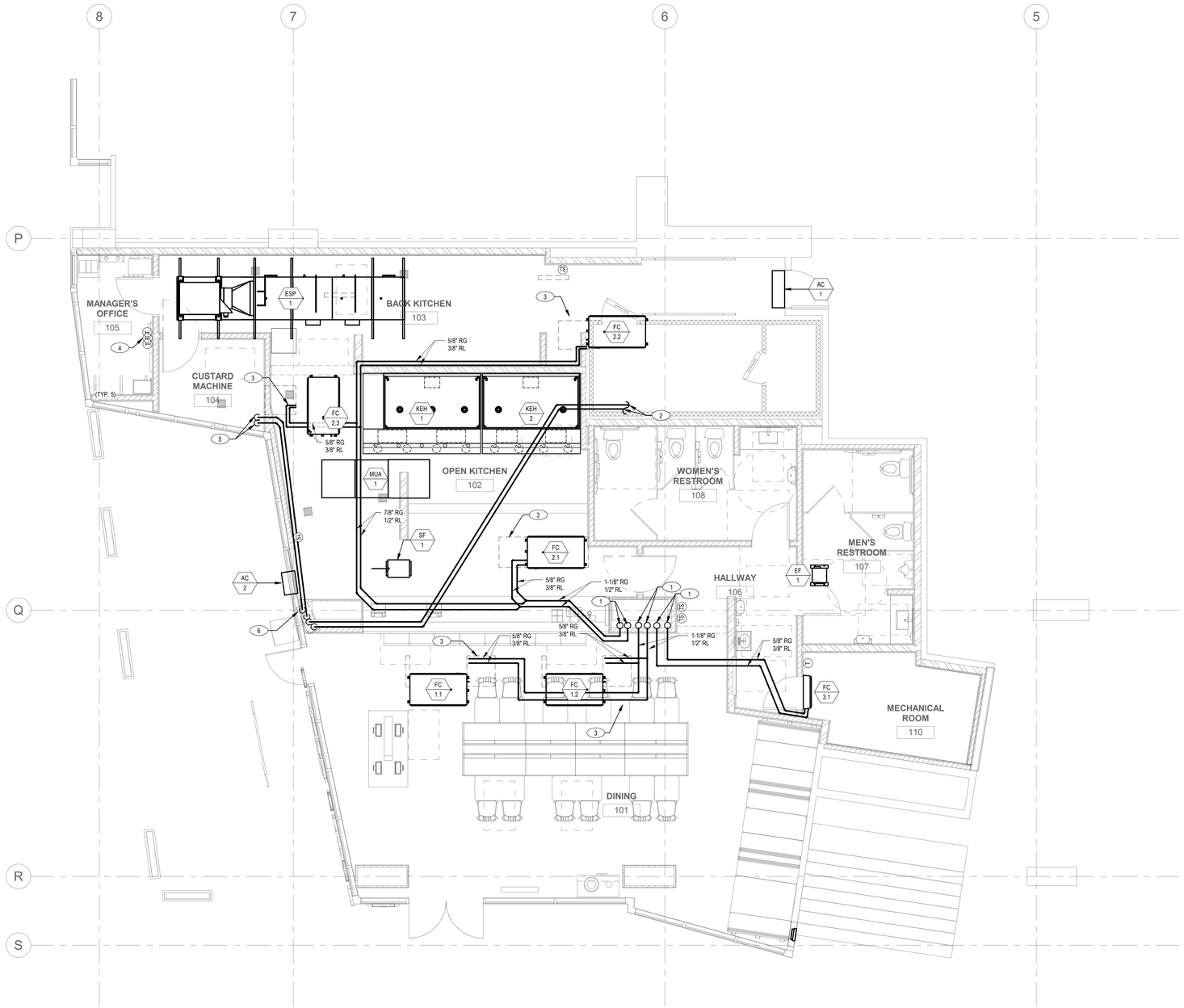
REGISTERED PROFESSIONAL ENGINEER DITSOT ESTRADA JR. M38244 MECHANICAL STATE OF CALIFORNIA

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before proceeding or fabricating any work. Do not scale these drawings.

SHEET NAME: **MECHANICAL FIRST FLOOR REMODEL PLAN**

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: 1/4" = 1'-0"

SHEET NO: **M211**



MECHANICAL PIPING LEVEL 01 REMODEL PLAN 1

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

RENOVATION KEY NOTES

1. REFRIGERATION PIPING ROUTED FROM CONDENSER UNITS IN THE THIRD FLOOR PARKING GARAGE DOWN TO SERVE FAN COILS THROUGH EXISTING PIPE CHASE. PROVIDE JACKETING ON ALL REFRIGERATION LINES.
2. REFRIGERANT LINES FROM CONDENSER IN THE BASEMENT PARKING GARAGE SERVING KITCHEN EQUIPMENT 1B AND 1D. SEE KITCHEN DRAWINGS FOR ADDITIONAL INFORMATION.
3. KEEP SERVICE AREA CLEAR FOR OPERATION AND MAINTENANCE ACCESS. WHERE REQUIRED, PROVIDE ACCESS PANEL.
4. ALL THERMOSTATS SERVING ALL FAN COIL UNITS TO BE LOCATED IN MANAGER'S OFFICE. COORDINATE WITH ARCHITECT FOR FINAL LOCATION.
5. REFRIGERANT LINES FROM CONDENSER IN THE BASEMENT PARKING GARAGE SERVING KITCHEN EQUIPMENT 161. SEE KITCHEN DRAWINGS FOR ADDITIONAL INFORMATION.
6. EACH PIPE ROUTING SHOWN REPRESENTS A PAIR OF PIPES BACK TO THE CONDENSER UNIT.

GENERAL NOTES

1. WHERE ENCLOSURES ARE NOT REQUIRED, HOODS, GREASE REMOVAL DEVICES, EXHAUST FANS, AND DUCTS SHALL HAVE A CLEARANCE OF NOT LESS THAN 18" TO COMBUSTIBLE MATERIAL, 6" TO LIMITED-COMBUSTIBLE MATERIAL, AND 0" TO NONCOMBUSTIBLE MATERIAL PER ALL APPLICABLE CODE SECTIONS.
2. PROVIDE MANUAL BALANCING DAMPER FOR ALL BRANCH DUCTWORK FOR PROPER BALANCING OF ALL AIR SYSTEMS, WHETHER SHOWN ON DRAWINGS OR NOT.
3. SEE SHEET M501 FOR PIPING DIAGRAM DETAIL.
4. ENVIRONMENTAL EXHAUST OUTLETS SHALL TERMINATE NO LESS THAN 3' FROM PROPERTY LINE, 3' FROM OPENINGS INTO THE BUILDING AND 10' FROM ANY FORCED AIR INTAKE.
5. OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM LESS THAN 10' IN DISTANCE FROM AN APPLIANCE VENT OUTLET, A VENT OPENING OF A PLUMBING DRAINAGE SYSTEM, THE DISCHARGE OUTLET OF AN EXHAUST FAN, OR A MEDICAL-SURGICAL VACUUM OUTLET UNLESS THE OUTLET IS 3' ABOVE THE OUTSIDE-AIR INLET.
6. 510.7.3 CLEARANCE. CLEARANCE FROM THE DUCT OR THE EXHAUST FAN TO THE INTERIOR SURFACE OF ENCLOSURES OF COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 18 INCHES (457 MM), AND CLEARANCE FROM THE DUCT TO THE INTERIOR SURFACE OF ENCLOSURES OF NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 6 INCHES (152 MM). PROVISIONS FOR REDUCING CLEARANCES AS DESCRIBED IN SECTION 507.4 THROUGH SECTION 507.4.3.3 SHALL NOT BE APPLICABLE TO ENCLOSURES. [NFPA 96:7.7.2.2.1 - 7.7.2.2.3] EXCEPTION: CLEARANCE FROM THE OUTER SURFACES OF FIELD APPLIED GREASE DUCT ENCLOSURES AND FACTORY-BUILT GREASE DUCT ENCLOSURES TO THE INTERIOR SURFACES OF CONSTRUCTION INSTALLED AROUND THEM SHALL BE PERMITTED TO BE REDUCED WHERE THE FIELD-APPLIED GREASE DUCT ENCLOSURE MATERIALS AND THE FACTORY-BUILT GREASE DUCT ENCLOSURES ARE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THE LISTINGS AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ARE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. [NFPA 96:7.7.2.2.4]

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STORE NO: CA #1398

SHAKE SHACK

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3786 WILSHIRE BLVD. LOS ANGELES, CA 90010

REVISION

△	DATE	DESCRIPTION
	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS: PERMIT/BID SET

PRELIMINARY:

Preliminary Documents Are for Design Review only and not intended for bidding, negotiating, permitting or construction purposes. They were prepared by or under the supervision of Zebra Projects, INC.

REGISTERED PROFESSIONAL ENGINEER OMAN ESTRADA JR M36244 MECHANICAL STATE OF CALIFORNIA

FIELD VERIFICATION:

The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME: **MECHANICAL PIPING FIRST FLOOR REMODEL PLAN**

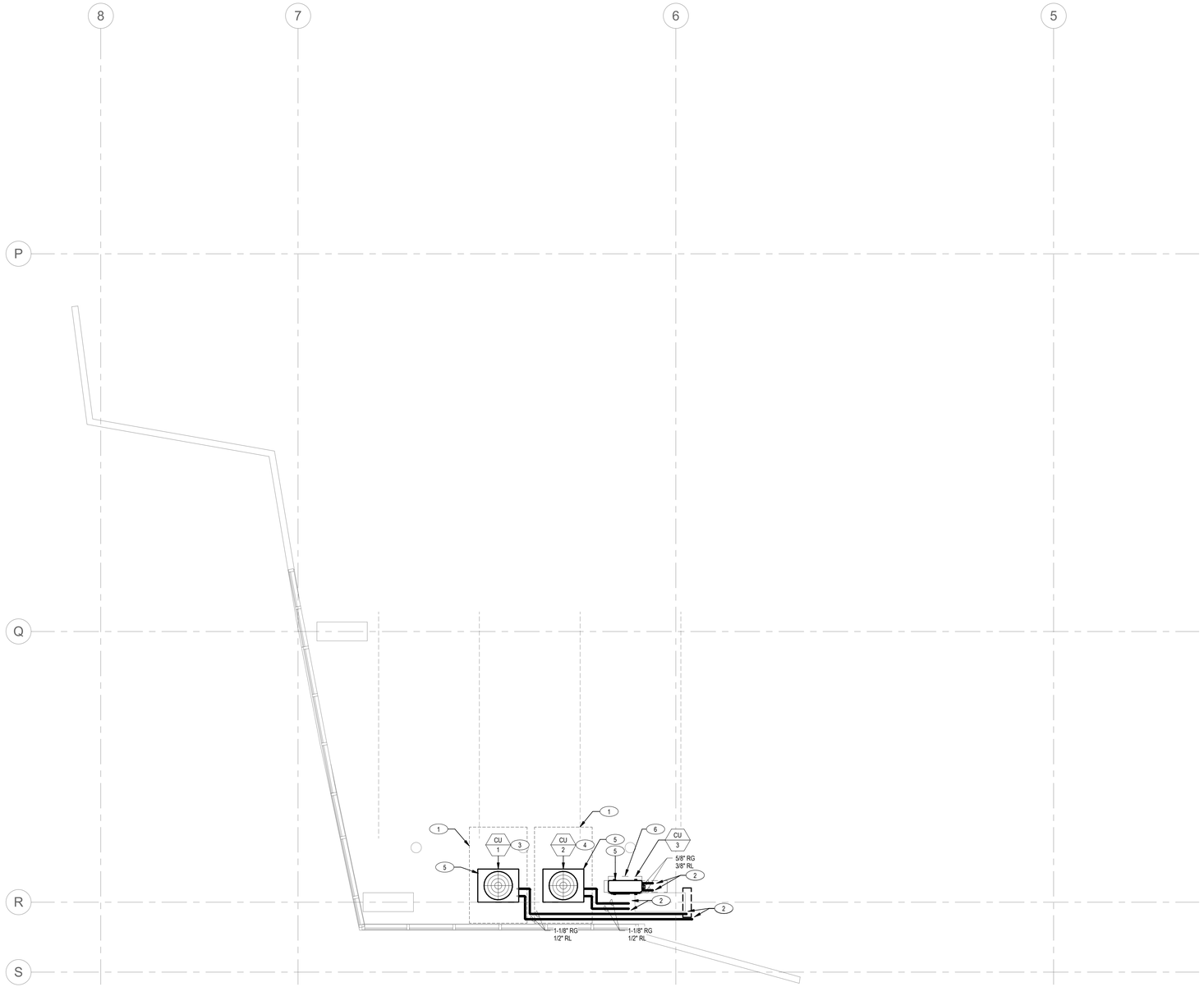
DATE: 11/08/21

PROJECT NO: SHK-21-008

DRAWN: SK

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

SHEET NO: **M212**



MECHANICAL REMODEL THIRD LEVEL PLAN 1

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

RENOVATION KEY NOTES

1 UNITS TO BE LOCATED AT A MINIMUM OF 20" FROM THE EXTERIOR BUILDING WALL, 8" BETWEEN THE UNITS, AND WITH 40" OF SERVICE CLEARANCE ON THE FRONT SIDE OF THE UNIT.

2 REFRIGERATION PIPING ROUTED DOWN TO LEVEL ONE RESTAURANT SPACE THROUGH EXISTING PIPE CHASE. PROVIDE JACKETING ON ALL REFRIGERATION LINES. CONTRACTOR TO CONFIRM EXACT ROUTING IN FIELD.

3 CONDENSING UNIT SERVING FAN COILS IN DINING AREA.

4 CONDENSING UNIT SERVING FAN COILS IN KITCHEN/BACK OF HOUSE AREA.

5 COORDINATE WITH STRUCTURAL ENGINEER TO PROVIDE HOUSEKEEPING PADS, MINIMUM HEIGHT 4".

6 SERVICE CLEARANCE FOR CONDENSING UNITS. SERVICE CLEARANCES MAY OVERLAP, BUT NO EQUIPMENT MAY BE PLACED WITHIN THE AREA.

GENERAL NOTES

1 WHERE ENCLOSURES ARE NOT REQUIRED, HOODS, GREASE REMOVAL DEVICES, EXHAUST FANS, AND DUCTS SHALL HAVE A CLEARANCE OF NOT LESS THAN 18" TO COMBUSTIBLE MATERIAL, 6" TO LIMITED-COMBUSTIBLE MATERIAL, AND 0" TO NONCOMBUSTIBLE MATERIAL PER ALL APPLICABLE CODE SECTIONS.

2 PROVIDE MANUAL BALANCING DAMPER FOR ALL BRANCH DUCTWORK FOR PROPER BALANCING OF ALL AIR SYSTEMS, WHETHER SHOWN ON DRAWINGS OR NOT.

3 SEE SHEET M501 FOR PIPING DIAGRAM DETAIL.

4 ENVIRONMENTAL EXHAUST OUTLETS SHALL TERMINATE NO LESS THAN 3' FROM PROPERTY LINE, 3' FROM OPENINGS INTO THE BUILDING AND 10' FROM ANY FORCED AIR INTAKE.

5 OUTSIDE AIR FOR A HEATING OR COOLING SYSTEM SHALL NOT BE TAKEN FROM LESS THAN 10' IN DISTANCE FROM AN APPLIANCE VENT OUTLET, A VENT OPENING OF A PLUMBING DRAINAGE SYSTEM, THE DISCHARGE OUTLET OF AN EXHAUST FAN, OR A MEDICAL-SURGICAL VACUUM OUTLET UNLESS THE OUTLET IS 3' ABOVE THE OUTSIDE-AIR INLET.

6 510.7.3 CLEARANCE. CLEARANCE FROM THE DUCT OR THE EXHAUST FAN TO THE INTERIOR SURFACE OF ENCLOSURES OF COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 18 INCHES (457 MM), AND CLEARANCE FROM THE DUCT TO THE INTERIOR SURFACE OF ENCLOSURES OF NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE CONSTRUCTION SHALL BE NOT LESS THAN 6 INCHES (152 MM). PROVISIONS FOR REDUCING CLEARANCES AS DESCRIBED IN SECTION 507.4 THROUGH SECTION 507.4.3.3 SHALL NOT BE APPLICABLE TO ENCLOSURES. [NFPA 96:7.7.2.2.1 - 7.7.2.2.3] EXCEPTION: CLEARANCE FROM THE OUTER SURFACES OF FIELD APPLIED GREASE DUCT ENCLOSURES AND FACTORY-BUILT GREASE DUCT ENCLOSURES TO THE INTERIOR SURFACES OF CONSTRUCTION INSTALLED AROUND THEM SHALL BE PERMITTED TO BE REDUCED WHERE THE FIELD-APPLIED GREASE DUCT ENCLOSURE MATERIALS AND THE FACTORY-BUILT GREASE DUCT ENCLOSURES ARE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THE LISTINGS AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ARE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION. [NFPA 96:7.7.2.2.4]

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REVISION

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1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS:
PERMIT/BID SET

PRELIMINARY:
Preliminary Documents Are for Design Review only and not intended for bidding, negotiating, permitting or construction purposes. They were prepared by or under the supervision of Zebra Projects, INC.

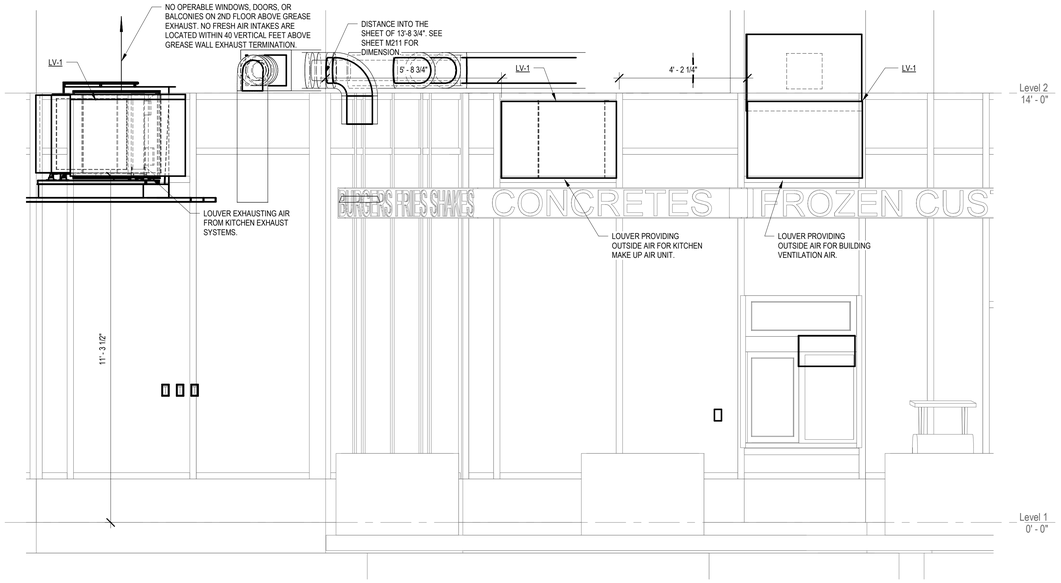
REGISTERED PROFESSIONAL ENGINEER
OMAR ESTRADA
M36244
MECHANICAL
STATE OF CALIFORNIA

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME:
MECHANICAL THIRD FLOOR REMODEL PLAN

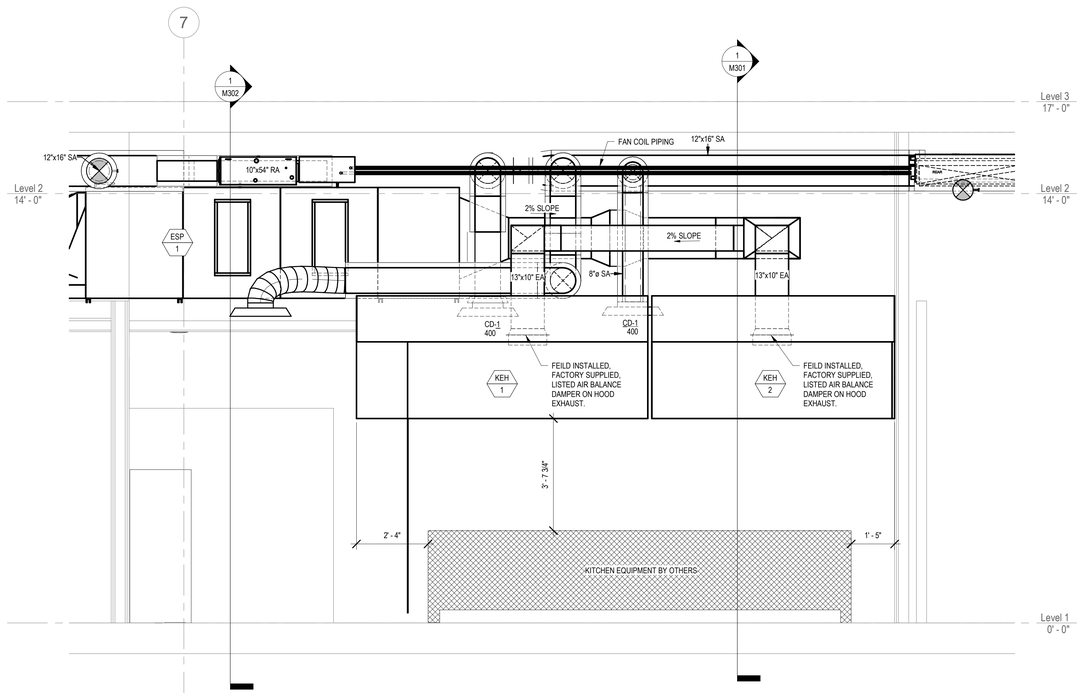
DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: 1/4" = 1'-0"

SHEET NO:
M221



MECHANICAL SECTION - EXTERNAL LOUVERS 3

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



MECHANICAL SECTION - BACK OF HOUSE 2

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

STATIC PRESSURE CALCULATIONS: ESP-1

EXHAUST FAN CFM = 2742 CFM

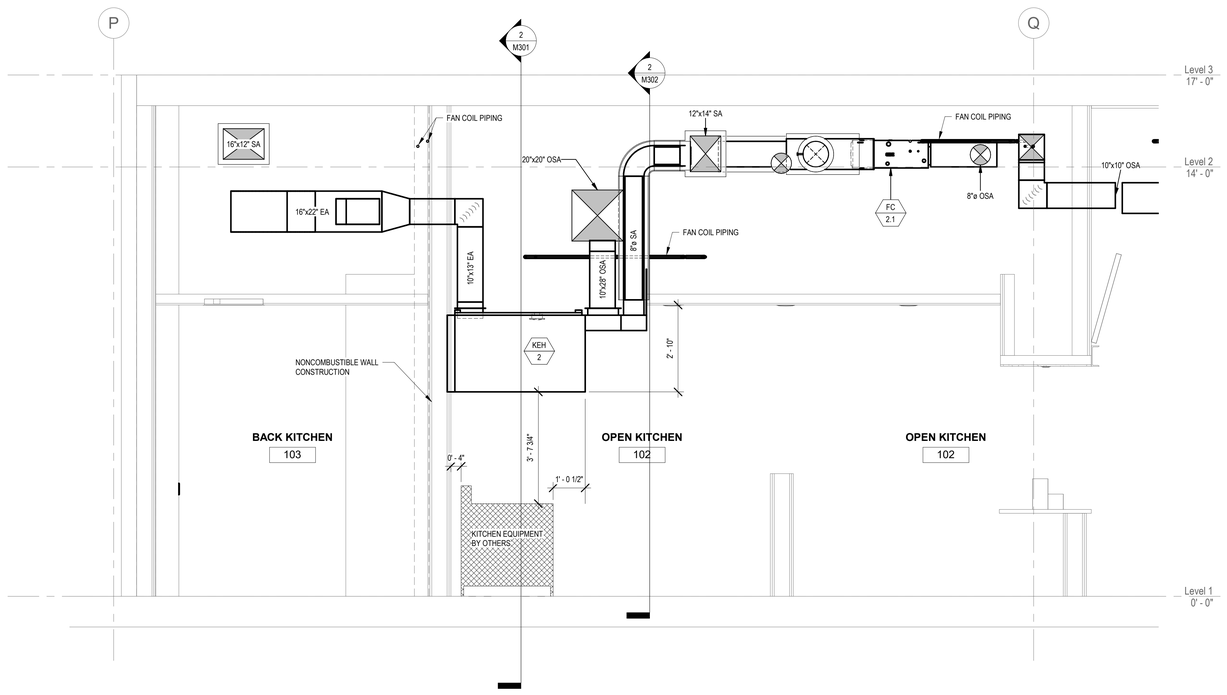
EXHAUST DUCT VELOCITY TO FAN = 1520 FPM

STATIC PRESSURE LOSSES:

HOOD RISERS AND GREASE FILTERS = 0.61"

DUCT SIZE	CFM	LENGTH	VELOCITY	
30"x30"	2743	8 FEET	560 FPM	DUCTS AND FITTINGS = 0.02"
22"x16"	2742	10 FEET	1122 FPM	DUCTS AND FITTINGS = 0.13"
13"x10"	1371	8 FEET	1520 FPM	DUCTS AND FITTINGS = 0.15"

20% SAFTY FACTOR = 0.20"
TOTAL S.P. = 1.11"



MECHANICAL SECTION - KITCHEN HOODS 1

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

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	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
B	02/18/22	REVISION B
C	03/11/22	REVISION C
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

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REGISTERED PROFESSIONAL ENGINEER DYRON ESTRADA M38244 MECHANICAL STATE OF CALIFORNIA

FIELD VERIFICATION:
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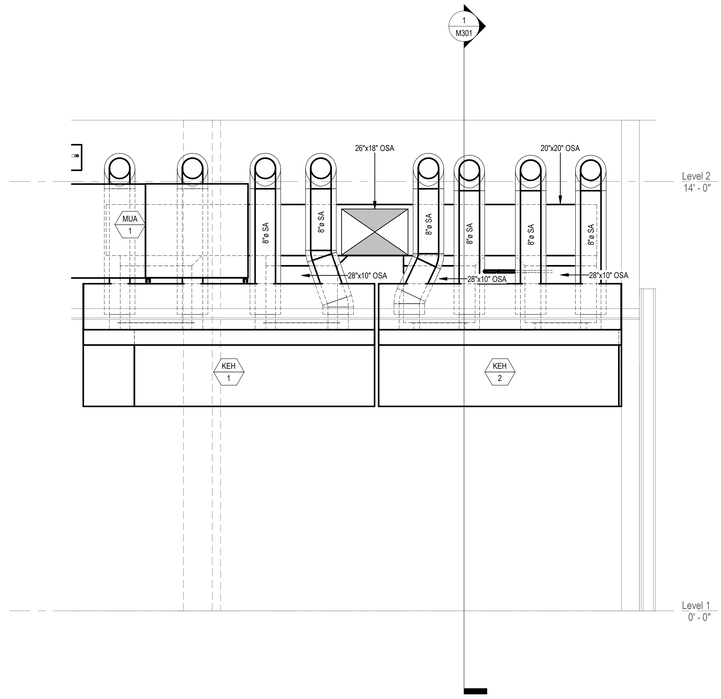
SHEET NAME:
MECHANICAL SECTION

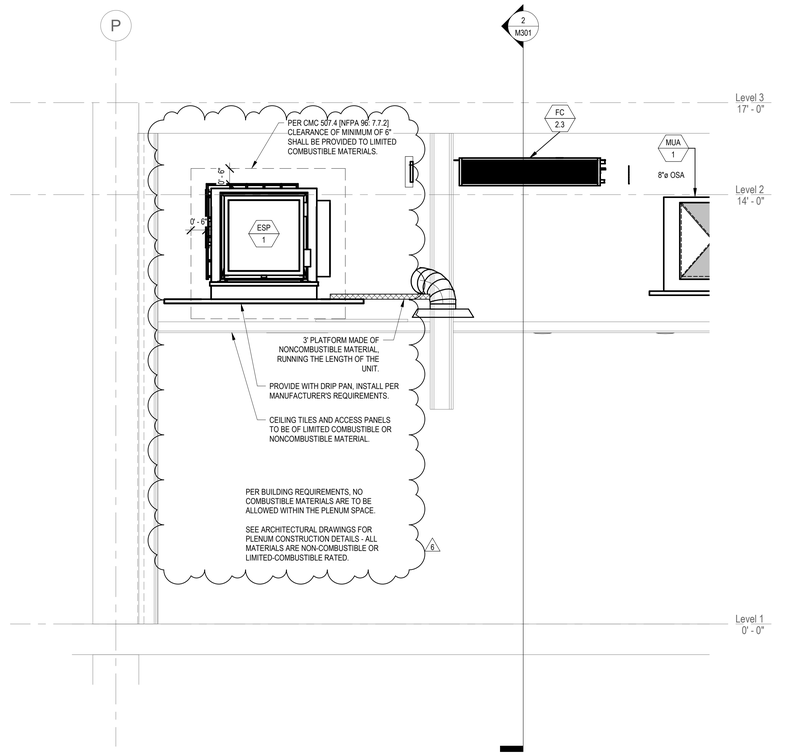
DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: As indicated

SHEET NO:
M301



MECHANICAL SECTION - SUPPLY AIR TO KITCHEN HOODS 2

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



MECHANICAL SECTION - ESP UNIT 1

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

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REVISION

△	DATE	DESCRIPTION
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4
5	10/19/22	REVISION 5
6	10/11/22	REVISION 6

STATUS:
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M36244
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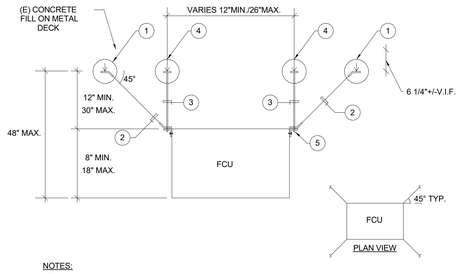
SHEET NAME:
MECHANICAL SECTION

DATE: 06/29/22
PROJECT NO: SHK-21-008
DRAWN: Author
SCALE: 1/2" = 1'-0"

SHEET NO:
M302

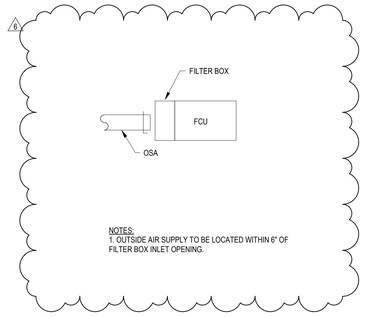


NOTES:

1. 3/8"◦ HILTI KBTZ W/ 2" EMBED AT CENTERLINE OF BOTTOM FLUTE, TYPICAL.
2. MASON SCBA-1 SEISMIC CABLE BRACE AND ANCHOR, TYPICAL OF (4), NOT REQUIRED IF WEIGHT IS LESS THAN 75 LBS.
3. 1/2"◊ HANGER ROD, WITH ROD STIFFENERS (TYP-4), USE DBL NUT AND WASHERS AT ROD CONNECTION TO UNIT MOUNTING BRACKET AND SINGLE NUT AND WASHER AT TOP CONNECTION.
4. 3/8"◦ HILTI KBTZ WITH 2" EMBED AT CENTERLINE OF LOW FLUTE WITH COUPLING NUT FOR 1/2"◊ ROD, (TYP. OF 4)
5. BUILT-IN MOUNTING BRACKET BY MANUFACTURER..

FAN COIL MOUNTING DETAIL 2

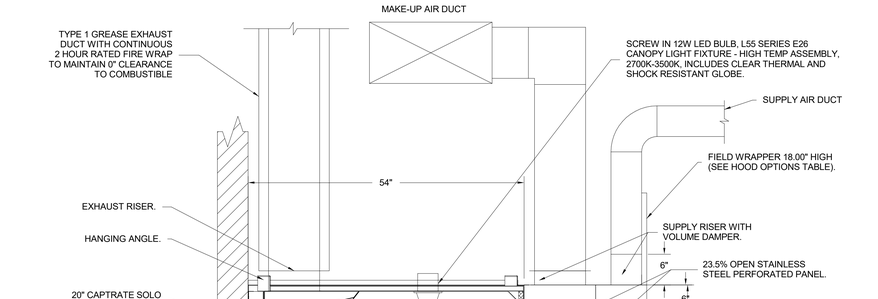
SCALE: NTS



NOTES:
1. OUTSIDE AIR SUPPLY TO BE LOCATED WITHIN 6" OF FILTER BOX INLET OPENING.

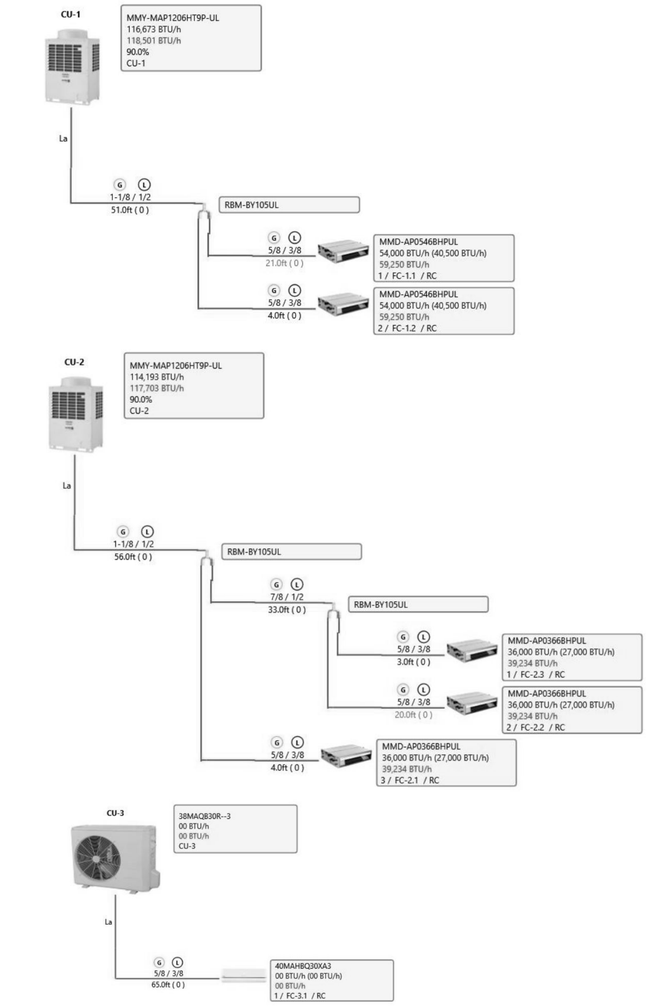
OSA FILTER BOX CONNECTION DETAIL 4

SCALE: 12" = 1'-0"



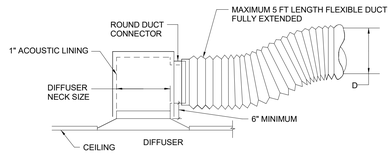
KITCHEN HOOD ELEVATION 1

SCALE: NTS

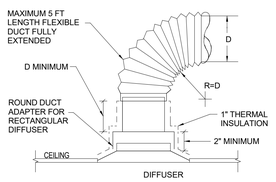


SV-DTL-08_CU PIPING 6

SCALE: 12" = 1'-0"



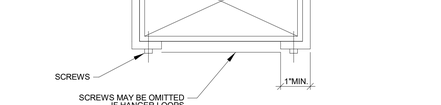
SIDE CONNECTION

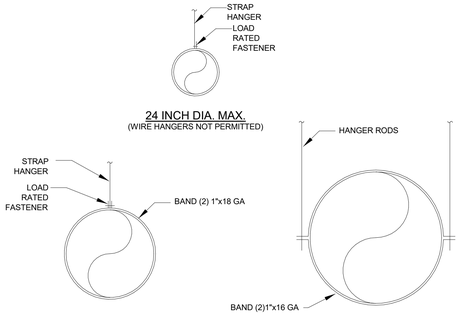


TOP CONNECTION

DIFFUSER CONNECTION DETAIL 5

SCALE: NTS





NOTES:

1. FOR HANGER SIZE AND SPACING, SEE SMACNA HVAC DUCT CONSTRUCTION STANDARDS TABLE.
2. FOR UPPER ATTACHMENT TO BUILDING SEE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, WITH SPECIFIC STRUCTURAL ENGINEER APPROVAL.
3. FOR BRACING AND OTHER SEISMIC REQUIREMENTS SEE SPECIFICATIONS

DUCT SUPPORT DETAIL 3

SCALE: NTS

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REVISION

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REGISTERED PROFESSIONAL ENGINEER OTHON ESTRADA M36244 MECHANICAL STATE OF CALIFORNIA

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SHEET NAME:
MECHANICAL DETAILS

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE:

SHEET NO:
M501

Viro Environmental Corporation Of America, Inc.

Atlanta, Austin, Chicago, Columbus, Dallas, Denver, Des Moines, Houston, Kansas City, Mpls, Orlando, St Louis

TOLL FREE 800-325-VIRO(8476)

Water Leak Testing of New and Existing Grease exhaust vent systems.
Summary: A high pressure multi-nozzle spinjet in conjunction (where needed) with a 15 degree or wider single nozzle lance is to be passed through all new grease exhaust vent systems with the water spray contacting all interior portions of the duct. This is to check for any liquid leakage in the system plus to check for adequate access and other problems that can be repaired during the construction or leak testing phase. All water used in the test must be collected in some fashion for discharge to a sanitary drain.

1. The water testing job shall to be scheduled after the welded grease exhaust system with the hood and all access plates installed. The leaktesting can be done in multi stages for tall multi story runs or multi story multi duct runs, but there must be one final test of all connection joints.
2. All testing is to be done before any fire-wrap is installed or with fire wrap removed.
3. Testing Contractor shall verify water availability, building access, electrical availability, amount of high pressure hose needed to reach all areas of system, and any needed roof access with Job Superintendent when scheduling job.
4. The testing company should also re-verify during job reminder phone call that is to be made by Testing Contractor to the Job site Superintendent the working day before the job is scheduled.
5. A water source where a hose can be connected shall be available
6. A high pressure washer with minimum capabilities of 1000PSI @ 3GPM. (minimum requirements to run a multi nozzle duct cleaner(known as a spinjuet or roto-nozzle)
7. Adequate high pressure hose along with a 6" or 12" spinjet (or Roto-nozzle) shall be required.
8. The work should normally start at the intake(Hood) portion of the system (or at the electrostatic precipitator where applicable). The leaktest may start from other areas of the system depending on layout.
9. The nozzles shall progress through the system at a rate of approximately one foot every five seconds until it reaches the end point.
10. With the hood in place, the Testing Company shall collect the wastewater similar to a routine cleaning with the hood taped and clamped up with at least two mil or thicker clear poly (Plastic) funneling into a large watertight brute (or similar) bucket.
11. A water vacuum shall be used to make sure all excess water is removed from hood and ductwork when done.
12. The general contractor's welder shall be on-site during the leaktesting with proper welding equipment(A MIG welder is highy recommended), a bright portable light, with access to all parts of the system.
13. A spotter with the welder shall access the outside of the ductwork to spot any leaks.
14. If the duct leaks, the leaks shall be repaired and the test is to be redone
15. Additional leaks shall continue to be repaired and re-tested until no leaks exist.
16. When testing is completed, The Testing Company shall dry out the duct, remove the plastic and return system to same condition as found (with leaks repaired).
17. The Testing Company will take pictures of the system and procedure, then e-mail them to Enviromatic to verify the job is done correctly.

18. A leaktest form shall be filled out and signed that system is liquid tight as specified by NFPA96 guidelines.
19. The leaktest form shall note number of leaks found, number of re-testing required in needed, rough drawing of the system with access plate locations and where the leaks were found and repaired. The form shall have signature lines for both the job site representative and the testing company representative.
20. If any sealant (EX: JB Weld, epoxies,etc) is found in a welded duct, the test shall immediately fail and the leaktesting will cease immediately until all sealant is removed to bare metal or bare welds.
21. For listed ducts with sealed joints, only the listed sealant shall be used. The leaktesting will progress in the same manner as the welded ducts EXCEPT leakage requiring sealant repairs will need to cure for the required time before re-testing.

6

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REGISTERED PROFESSIONAL ENGINEER
OMAR ESTRADA JR.
M36244
MECHANICAL
STATE OF CALIFORNIA

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SHEET NAME:
MECHANICAL GREASE DUCT DETAILS

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: 12" = 1'-0"

SHEET NO:
M502

CITY OF LA DBS
DEPARTMENT OF BUILDING AND SAFETY

Refrigerant Concentration Limits and Sizing Acknowledgment form

(The final signed copy of this form shall be scanned onto the Mechanical Plans)

Date: 03/25/2022

Project Address: 3785 W WILSHIRE BLVD

Permit Application Number: 21044-10000-28036

The undersigned hereby certify that I am the Mechanical Engineer of Record of the property located at the address above and I certify that the size and location of the permanent openings provided for connecting spaces together is adequate to dilute the concentration of refrigerant that could potentially leak into these spaces. The refrigerant system quantity used shall not exceed the mass/volume limit listed in Table 1102.2 of the LAMC.

OTHON ESTRADA, JR.

Full Name (Engineer)

Signature (Engineer)

03/25/2022

Date

REGISTERED PROFESSIONAL ENGINEER OTHON ESTRADA JR M38244 MECHANICAL STATE OF CALIFORNIA

Mechanical Engineers Stamp

Lou DeAngelis

Full Name ☐Owner ☒Owner's Representative

Signature

3-31-22

Date

3 Sidewall direct venting

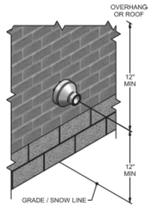
Sidewall termination – optional concentric vent

Description and usage

Lochinvar offers optional concentric combustion air and vent pipe termination kits (Factory Kit #100140480 for 3" diameter - Models 125 - 200 and #100140484 for 4" diameter - Models 285 - 500). Both combustion air and vent pipes must attach to the termination kit. The terminations kits must terminate outside the structure and must be installed as shown in FIG. 3-6.

The required combustion vent pipe materials are listed in Table 2C, on page 20 of this manual.

Figure 3-6 Concentric Sidewall Termination



Sidewall termination installation

1. Determine the best location for the termination kit (see FIG. 4-6).
2. Reference the *Determine Location Section* on page 23 of this manual for general termination considerations.
3. Cut one (1) hole (5 inch diameter for #100140480 installations or 7 inch diameter for #100140484 installations) into the structure to install the termination kit.
4. Partially assemble the concentric vent termination kit. Clean and cement using the procedures found in these instructions.
   a. Cement the Y concentric fitting to the larger kit pipe (FIG.'s 3-7 and 3-8).
   b. Cement the rain cap to the smaller diameter kit pipe (FIG.'s 3-7 and 3-8).

Figure 3-7 Kit Contents_100140480 - 125 -- 200

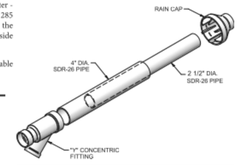


Figure 3-8 Kit Contents_100140484 - 285 -- 500

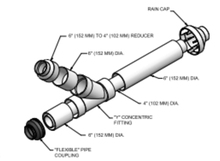


Table 3E Alternate Centrotherm Concentric Vent Terminations

Roof Terminations	
Size	**Part No.**
3"	ICRT3539
4"	ICRT4679
Wall Terminations	
Size	**Part No.**
3"	ICWT352
4"	ICWT462

Lochinvar®
615-889-8900 / Fax: 615-547-1000
www.Lochinvar.com

Typical Specification
SWH-SPEC-09

Typical Specification for Lochinvar® *SHIELD* Water Heater

Non-ASME models: SWR125(N,L); SWR150(N,L); SWR200(N,L); SWR285(N,L); SWR400(N,L)
ASME models: SWA150(N,L); SWA200(N,L); SWA285(N,L); SWA400(N,L); SWA500(N,L)

The **WATER HEATER** shall be a **LOCHINVAR SHIELD** Model **SW(R,A)_____(N,L)** having a maximum input rating of _____ Btu/Hr, a recovery capacity of _____ gallons per hour at a 100°F rise and shall be operated on (Natural Gas) or (LP Gas). The **WATER HEATER** shall be capable of full modulation firing down to 20% of rated input with a 5:1 turndown ratio. Note: SWR285N and SWR400N are non-AMSE models. Check local and state codes for allowance of non-ASME models over 200,000 Btu/hr input.

The **WATER HEATER** shall consist of a direct fired Stainless Steel heat exchanger mounted on top of a glass lined storage tank in a fashion that will reduce the amount of scale build-up that is known to reduce efficiency. The **WATER HEATER** shall have no visible pipes that connect the heat exchanger to the storage tank. There shall be no banding material, bolts, gaskets or "O" rings in the construction of the heat exchanger header. The Stainless Steel combustion chamber shall be designed to drain condensation to the bottom of the heat exchanger assembly. A built-in trap shall allow condensation to drain from the heat exchanger assembly. The **WATER HEATER** shall carry a three (3) year heat exchanger and tank warranty and a one (1) year parts warranty.

Specified **"SNA" SHIELD WATER HEATERS** shall bear the ASME "HLW" stamp and shall be National Board listed. The tank shall have a working pressure of 150 psi. The tank shall be glass lined and fired to 1600°F to ensure a molecular fusing of glass and steel. The tank shall be completely encased in high density insulation of sufficient thickness to meet the energy efficiency requirements of the latest edition of the ASHRAE 90.1 Standard. The tank shall be fitted with a brass drain valve.

The **WATER HEATER** shall be certified and listed by C.S.A. International under the latest edition of the harmonized ANSI Z21.10.3 test standard for the US and Canada. The **WATER HEATER** shall comply with the energy efficiency requirements of the latest edition of the ASHRAE 90.1 standard. The **WATER HEATER** shall be certified for indoor installation. The **WATER HEATER'S** efficiency shall be verified through third party testing by AHRI and listed in the AHRI Certification Directory.

The **WATER HEATER** shall be constructed with a heavy gauge steel jacket assembly, primed and pre-painted on both sides. The combustion chamber shall be sealed and completely enclosed, independent of the outer jacket assembly, so that integrity of the outer jacket does not affect a proper seal. A burner/flame observation port shall be provided. The burner shall be a premix design and constructed of high temperature stainless steel with a woven metal fiber outer covering to provide modulating firing rates. The **WATER HEATER** shall be supplied with a gas valve designed with negative pressure regulation and be equipped with a variable speed blower system, to precisely control the fuel/air mixture to provide modulating firing rates for maximum efficiency. The **WATER HEATER** shall operate in a safe condition at a de-rated output with gas supply pressures as low as 4 inches of water column.

The **WATER HEATER** shall utilize a 24 VAC control circuit and components. The control system shall have an electronic display for setup, status and diagnostics. All electronic circuitry shall be easily accessed and serviceable from the front of the jacket. The **WATER HEATER** shall be equipped with; a circulating pump; high limit temperature control; ASME certified temperature and pressure relief valve; inlet & outlet water temperature sensors; flue temperature sensor; runtime contacts; alarm contacts; low water flow protection, contacts for louvers, security protection, adjustable pump delay, enable/disable contacts and built-in freeze protection. The control shall have optional capability to communicate via Modbus or BACnet protocol and capability for optional CON-X-US remote connectivity. The manufacturer shall verify proper operation of the burner, all controls and the heat exchanger by connection to water and venting for a factory operation test prior to shipping.

The **WATER HEATER** shall feature the SMART CONTROL platform with pump delay, freeze protection, pump exercise and Start-Up Wizard operating with an LCD display and soft key pad. The **WATER HEATER** shall be equipped with an eight foot power cord. Supply voltage shall be 120 volt / 60 hertz / single phase.

The **WATER HEATER** shall be installed and vented with a (select one):
(a) Direct Vent Sidewall system with a horizontal sidewall termination of both the vent and combustion air. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the sidewall with the manufacturers specified vent termination. A separate pipe shall supply combustion air directly to the **WATER HEATER** from the outside. The air inlet pipe may be PVC, CPVC, Polypropylene, ABS, Galvanized, Dryer Vent, or Stainless Steel sealed pipe. The air inlet must terminate on the same sidewall with the manufacturer's specified air inlet cap. The total combined air intake length shall not exceed 150 equivalent feet. The total combined exhaust venting length shall not exceed 150 equivalent feet. ***Foam Core pipe is not an approved material for exhaust piping.***

(b) Direct Vent Vertical system with a vertical roof top termination of both the vent and combustion air. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the roof top with the manufacturers specified vent termination. A separate pipe shall supply combustion air directly to the **WATER HEATER** from the outside. The air inlet pipe may be PVC, CPVC, Polypropylene, ABS, Galvanized, Dryer Vent, or Stainless Steel sealed pipe. The air inlet must terminate on the roof top with the manufacturer's specified air inlet cap. The total combined air intake length shall not exceed 150 equivalent feet. The total combined exhaust venting length shall not exceed 150 equivalent feet. ***Foam Core pipe is not an approved material for exhaust piping.***

(c) Sidewall Vent with Room Air system with a horizontal sidewall termination of the vent with the combustion air drawn from the interior if the building. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the sidewall with the manufacturers specified vent termination. . The total combined exhaust venting length shall not exceed 150 equivalent feet. ***Foam Core pipe is not an approved material for exhaust piping.***

(d) Vertical Vent with Room Air system with a vertical rooftop termination of the vent with the combustion air drawn from the interior of the building. The flue shall be PVC, CPVC, Polypropylene or Stainless Steel sealed vent material terminating at the rooftop with the manufacturers specified vent termination. The total combined exhaust venting length shall not exceed 150 equivalent feet. ***Foam Core pipe is not an approved material for exhaust piping.***

(e) Vertical Vent with Sidewall Air system with a vertical rooftop termination of the vent with the combustion air being drawn horizontally from a sidewall. The flue shall be PVC, CPVC, Polypropylene, or Stainless Steel sealed vent material terminating at the roof top with the manufacturers specified vent termination. A separate pipe shall supply combustion air directly to the **Water Heater** from the outside. The air inlet may be PVC, CPVC, Polypropylene, ABS, Galvanized, Dryer Vent, or Stainless Steel sealed pipe. The air inlet must terminate on a sidewall using the manufacturers specified air inlet cap. The total combined air intake length shall not exceed 150 equivalent feet. The total combined exhaust venting length shall not exceed 150 equivalent feet. ***Foam Core pipe is not an approved material for exhaust piping.***

The **WATER HEATER** shall be approved for 180°F operation. The **WATER HEATER** shall have an independent laboratory rating for Oxides of Nitrogen (NO_x) of 20 ppm or less, corrected to 3% O_2. The **WATER HEATER** shall operate at altitudes up to 4,500 feet above sea level without additional parts or adjustments.

Maximum unit dimensions shall be: Width _____inches and Height _____ inches. Maximum unit weight shall be_____pounds.

The Firing Control System shall be **M9, Direct Spark Ignition with Electronic Supervision.**

4/20 – Printed in U.S.A.

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REVISION

△	DATE	DESCRIPTION
	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
C	03/11/22	REVISION C
D	04/04/22	REVISION D
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS: PERMIT/BID SET

PRELIMINARY:
Preliminary Documents Are for Design Review only and not intended for bidding, negotiating, permitting or construction purposes. They were prepared by or under the supervision of Zebra Projects, INC

REGISTERED PROFESSIONAL ENGINEER OTHON ESTRADA JR M38244 MECHANICAL STATE OF CALIFORNIA

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME: **MECHANICAL FLUE VENTILATION AIR AND SUPPLEMENTAL DOCUMENTS**

DATE: 01/26/22 | PROJECT NO: SHK-21-008

DRAWN: Author | SCALE:

SHEET NO: **M503**

SPECIFICATION TABLE OF CONTENTS

SECTION 230000 - ENERGY CONSERVATION

A. HVAC SYSTEMS AND EQUIPMENT CAPACITIES DO NOT EXCEED CALCULATED LOADS.

B. THEROMSTATIC CONTROLS.
1. THERMOSTATIC CONTROLS SHALL HAVE A 5 DEG-F DEADBAND.
2. THERMOSTATIC CONTROLS SHALL BE CAPABLE OF OPERATING THE DOWN TO 55 DEF-F OR UP TO 85 DEG-F.
3. EACH ZONE SHALL BE PROVIDED WITH AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS FOR STARTING AND STOPPING THE SYSTEM FOR SEVERN DIFFERENT DAILY SCHEDULES PER WEEK.

SECTION 230500 - COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS, AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SCOPE OF WORK

A. PROVIDE LABOR, INCLUDING FIELD ERECTION AND SUPERVISION, MATERIALS, EQUIPMENT AND ANCILLARIES, AND COORDINATE, PROCURE, FABRICATE, DELIVER, ERECT OR INSTALL, INTERFACE WITH EXISTING WORK, START, DEBUG AND TEST ALL SYSTEMS AS NECESSARY TO PROVIDE THE OWNER WITH A COMPLETE OPERATING FACILITY IN CONFORMANCE WITH THE CONTRACT DOCUMENTS AND IN CONFORMITY WITH REQUIREMENTS OF ALL AUTHORITIES HAVE JURISDICTION.

B. THE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
1. DEMOLITION AND REMOVAL OF MECHANICAL WORK
2. DUCTWORK AND AIR OUTLETS.
3. AIR-CONDITIONING AND EXHAUST SYSTEMS.
4. KITCHEN HOOD AND EXHAUST SYSTEMS.
5. MAKEUP AIR SYSTEMS.
6. THERMAL INSULATION.
7. COORDINATION WITH OTHER TRADES FOR LOCATION OF DUCTWORK AND TO INFORM THE GENERAL CONTRACTOR (VIA DIMENSIONAL DRAWINGS) OF THE EXACT SIZE AND LOCATION OF ALL ROOF AND WALL OPENINGS.
8. MISCELLANEOUS STEEL WORK, SUPPORTS AND HANGERS AND CUTTING AND PATCHING OF ROOF, WALLS AND PARTITIONS.
9. RECORD DRAWINGS.
10. CONTROLS.
11. TESTING, ADJUSTING, AND BALANCING.

C. RELATED WORK INCLUDED IN THIS SECTION AND IN OTHER SECTIONS.
1. GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL WORK DESCRIBED IN THE CONSTRUCTION DOCUMENTS.
2. REFER TO THE RESPONSIBILITY MATRIX FOR ADDITIONAL INFORMATION.

1.3 SUBMITTALS

A. PROVIDE CONTRACTOR SUBMITTAL MATERIAL WITH DESCRIPTIVE DATA FOR ALL PRODUCTS AND MATERIALS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING, PRIOR TO INSTALLATION. ALL SUBMITTALS SHALL BE HIGHLIGHTED TO INDICATE SPECIFIC PRODUCTS OR MATERIALS BEING USED. ALLOW MIN 5 DAYS FOR ENGINEER TO REVIEW SUBMITTALS.
1. COORDINATED LAYOUT PLANS, SHOWING WORK OF ALL TRADES, INCLUDING BUT NOT LIMITED TO DUCTWORK; HVAC, REFRIGERANT, PLUMBING, FIRE PROTECTION PIPING; ELECTRICAL CONDUITS AND BUS DUCTS; EQUIPMENT. DRAWINGS SHALL BE 1/4 SCALE.
2. DUCTWORK ACCESSORIES.
3. DUCTWORK TYPICAL CONSTRUCTION.
4. DUCT SEALING.
5. REFRIGERANT PIPING.
6. DAMPERS.
7. DIFFUSERS, GRILLES AND REGISTERS.
8. CERTIFIED ACOUSTICAL TEST PERFORMANCE DATA FOR DIFFUSERS, REGISTERS, GRILLES AND TERMINAL AIR UNITS.
9. AIR AND WATER TEST AND BALANCE.
10. COMPLETE FORMS PROPOSED FOR USE IN COMPILING AND RECORDING TEST AND BALANCE DATA.
11. CONTROL DEVICES AND SYSTEMS.
12. CONTROL SEQUENCE AND SYSTEM DRAWINGS.
13. FIRE PROTECTION SYSTEM LAYOUTS IN CODE COMPLIANCE.
14. VIBRATION ISOLATION.
15. ONE SET OF AS-BUILT REPRODUCIBLE DRAWINGS.

B. PROVIDE 1 COPY OF APPROVED SUBMITTALS TO THE OFFICE OF THE BUILDING ENGINEER.

1.4 PRODUCT SUBSTITUTIONS

A. THE CONTRACTOR SHALL CERTIFY THE FOLLOWING ITEMS ARE CORRECT WHEN USING SUBSTITUTED PRODUCTS OTHER THAN THOSE SCHEDULED OR SHOWN ON THE DRAWINGS AS A BASIS OF DESIGN:
1. THE PROPOSED SUBSTITUTION DOES NOT AFFECT DIMENSIONS SHOWN ON DRAWINGS.
2. THE CONTRACTOR SHALL PAY FOR CHANGES TO BUILDING DESIGN, INCLUDING ENGINEERING DESIGN, DETAILING, STRUCTURAL SUPPORTS, AND CONSTRUCTION COSTS CAUSED BY PROPOSED SUBSTITUTION.
3. THE PROPOSED SUBSTITUTION HAS NO ADVERSE EFFECT ON OTHER TRADES, CONSTRUCTION SCHEDULE, OR SPECIFIED WARRANTY REQUIREMENTS.
4. MAINTENANCE AND SERVICE PARTS AVAILABLE LOCALLY ARE READILY OBTAINABLE FOR THE PROPOSED SUBSTITUTE.

B. THE CONTRACTOR FURTHER CERTIFIES FUNCTION, APPEARANCE, AND QUALITY OF PROPOSED SUBSTITUTION ARE EQUIVALENT OR SUPERIOR TO SPECIFIED ITEM.

C. THE CONTRACTOR AGREES THAT THE TERMS AND CONDITIONS FOR THE SUBSTITUTED PRODUCT THAT ARE FOUND IN THE CONTRACT DOCUMENTS APPLY TO THIS PROPOSED SUBSTITUTION.

1.5 MAINTENANCE MANUALS AND AS-BUILT DRAWINGS

A. PROVIDE FOUR (4) COPIES OF OPERATING AND MAINTENANCE MANUAL FOR OWNER'S USE FOR EACH PIECE OF EQUIPMENT WITHIN 90 DAYS OF ACCEPTANCE. EACH ITEM SHALL BE CROSS-REFERENCED AND NUMBERED WITH AS-BUILT DRAWING DESCRIPTIONS.

B. SOFT COPY OF AS-BUILT DRAWINGS ON AUTOCAD AND PDF AND ONE SET OF HARD COPY SHALL BE DELIVERED TO OWNER WITHIN 90 DAYS OF SYSTEM ACCEPTANCE.

1.6 GUARANTEES

A. GUARANTEE: ALL MATERIALS, APPARATUS AND WORKMANSHIP INSTALLED UNDER THIS SECTION SHALL BE UNCONDITIONALLY GUARANTEED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE OF WORK BY THE OWNER AGAINST FAILURE DUE TO FAULTY MATERIAL OR WORKMANSHIP. THE CONTRACTOR SHALL CORRECT DEFECTS AT NO ADDITIONAL COST TO THE OWNER. LABOR AND REPLACEMENT OF PARTS TO BE ACCOMPLISHED AT NO COST TO OWNER.

1.7 SEISMIC SUPPORT

A. CONTRACTOR SHALL SUPPORT AND BRACE ALL NEW HVAC, PLUMBING AND FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH REQUIREMENTS SPECIFIED.

1.8 PRODUCT HANDLING

A. PROTECTION: PROTECT MATERIALS AND EQUIPMENT FROM DAMAGE DURING SHIPPING, STORAGE AND HANDLING. REMOVE FROM THE SITE ANY WET OR DAMAGED DUCT LINER OR INSULATION.

B. STORAGE: WHERE POSSIBLE, STORE MATERIALS AND EQUIPMENT INSIDE AND PROTECT FROM THE WEATHER. WHERE NECESSARY TO STORE OUTSIDE, STORE ABOVE GRADE AND ENCLOSE WITH WATERPROOF WRAPPING.

C. REPLACEMENT: IN THE EVENT OF DAMAGE, IMMEDIATELY REPAIR ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.

1.9 CONTRACT DRAWINGS

A. CONTRACT DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF THE WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, DUCTS, PIPING AND APPROXIMATE SIZES AND LOCATIONS OF EQUIPMENT AND OUTLETS. DO NOT SCALE DRAWINGS FOR MEASUREMENTS.

B. CONSULT KITCHEN, MECHANICAL, PLUMBING, ARCHITECTURAL, STRUCTURAL AND ELECTRICAL CONTRACT DRAWINGS AND SPECIFICATIONS TO BECOME FAMILIAR WITH ALL CONDITIONS AFFECTING THE WORK, COORDINATE INTERCONNECTING WORK WITH OTHER TRADES AFFECTED, AND VERIFY ALL SPACES IN WHICH THE WORK WILL BE INSTALLED.

C. WHERE JOB CONDITIONS REQUIRE REASONABLE CHANGES IN ORDER TO COORDINATE INSTALLATION WITH OTHER TRADES, THESE CHANGES SHALL BE MADE WITHOUT EXTRA COST TO THE OWNER.

1.10 DEMOLITION

A. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE PROTECTION AND BARRIERS AFTER DEMOLITION OPERATIONS ARE COMPLETE.

B. LOCATE, IDENTIFY, AND PROTECT MECHANICAL SERVICES PASSING THROUGH DEMOLITION AREA AND SERVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.

C. MATERIALS AND EQUIPMENT TO BE SALVAGED: REMOVE, DEMOUNT, AND DISCONNECT EXISTING MECHANICAL MATERIALS AND EQUIPMENT INDICATED TO BE REMOVED AND SALVAGED, AND DELIVER MATERIALS AND EQUIPMENT TO THE ONWER.

D. REPAIR OR REPLACE EQUIPMENT OR MATERIALS DAMAGED DURING DEMOLITION TO SATISFACTION OF OWNER'S DESIGNATED REPRESENTATIVE.

1.11 INTERRUPTION OF EXISTING UTILITY SERVICE:

A. COORDINATE THE SHUT-OFF AND DISCONNECTION OF UTILITY SERVICES WITH THE OWNER AND THE UTILITY COMPANY.

B. NOTIFY THE OWNER'S REPRESENTATIVE OWNER'S PROJECT REPRESENTATIVE AT LEAST 5 DAYS PRIOR TO COMMENCING DEMOLITION OPERATIONS.

1.12 SCHEDULING:

A. SUBMIT SCHEDULES INDICATING PROPOSED METHODS AND SEQUENCE OF OPERATIONS FOR DEMOLITION PRIOR TO COMMENCEMENT OF WORK. INCLUDE COORDINATION FOR SHUT-OFF OF UTILITY SERVICES AND DETAILS FOR DUST AND NOISE CONTROL.

B. COORDINATE SEQUENCING WITH CONSTRUCTION PHASING AND OWNER OCCUPANCY.

1.13 MAINTENANCE OF EXISTING UTILITY SERVICES

A. UNINTERRUPTED NORMAL USE OF THE EXISTING FACILITIES MUST BE MAINTAINED DURING THE TIME REQUIRED TO PERFORM THE COMPLETE INSTALLATION OF THE WORK INDICATED IN THE CONTRACT DOCUMENTS. IT IS MANDATORY THAT THE EXISTING BUILDINGS BE MAINTAINED IN SERVICE.

B. INVESTIGATE EXISTING CONDITIONS AND THE LOCATION OF ALL EXISTING EQUIPMENT AND THE LOCATION OF ALL EXISTING SERVICES BEFORE STARTING.

C. IF A SERVICE IS DISTURBED, IMMEDIATELY WITHOUT REGARD FOR WORKING HOURS, PLACE THE SERVICE BACK INTO OPERATION.

D. SUFFICIENT ADVANCE NOTICE SHALL BE GIVEN TO THE OWNER AND ITS PERMISSION OBTAINED PRIOR TO INTERRUPTION OF PRESENT SERVICES. IT SHOULD BE ASSUMED THAT DISRUPTION OF UTILITIES AND SERVICES WILL BE DONE AT OTHER THAN NORMAL WORKING HOURS. NO ADDITIONAL OR EXTRA PAYMENT WILL BE AUTHORIZED TO COMPLY WITH THESE REQUIREMENTS.

E. REPAIR, REPLACE AND MAINTAIN IN SERVICE ANY UTILITIES, FACILITIES, OR SERVICES (UNDERGROUND, OVERGROUND, INTERIOR OR EXTERIOR) DAMAGED, BROKEN OR OTHERWISE RENDERED INOPERATIVE DURING THE COURSE OF CONSTRUCTION IN THE EXISTING BUILDING.

F. ALL OPENINGS MUST BE SECURELY COVERED, OR OTHERWISE PROTECTED, TO PREVENT INJURY DUE TO CARELESSLY OR MALICIOUSLY DROPPED TOOLS OR MATERIALS, GRIT, DIRT, OR ANY FOREIGN MATTER. DAMAGED WORK SHALL BE REPAIRED OR REPLACED UNTIL WORK IS FULLY AND FINALLY ACCEPTED.

G. PROTECT HEATING EQUIPMENT AND ALL SIMILAR ITEMS OF EQUIPMENT FROM DIRT, GRIME, PLASTER, PAINT AND WATER DURING ALL PHASES OF CONSTRUCTION. THIS PROTECTION SHALL BE PROVIDED BY COVERING WITH TRANSPARENT PLASTIC SHEETING.

H. MAKE ALL CONNECTIONS TO EXISTING SYSTEM PIPING AND EQUIPMENT SYSTEMS DURING DESIGNATED PERIODS UPON APPROVAL OF THE OWNER AND AT NO INCREASE IN THE CONTRACT SUM.

I. DO NOT INTERRUPT EXISTING UTILITIES UTILIZED BY THE OWNER, EXCEPT AS APPROVED BY THE OWNER. INTERRUPTIONS MUST BE SCHEDULED TO SUIT THE OWNER'S REQUIREMENTS.

J. VERIFY ALL EXISTING WORK. WHERE EXISTING CONNECTIONS ARE PARTIAL, PROVIDE ALL NECESSARY MATERIALS, LABOR AND EQUIPMENT REQUIRED TO MODIFY EXISTING WORK. IN ADDITION, MAINTAIN INTEGRITY OF THE EXISTING SYSTEMS. RECTIFY ANY CONTAMINATION, DEGRADATION OF CLEANLINESS OR DAMAGE TO THE EXISTING SYSTEMS TO THE SATISFACTION OF THE OWNER.

1.14 INSTALLATION OF THE WORK

A. THE CONTRACT DRAWINGS INDICATE THE GENERAL ARRANGEMENTS FOR THE HVAC, KITCHEN, PLUMBING, AND FIRE PROTECTION SYSTEMS.
1. DRAWINGS ARE DIAGRAMMATIC AND DO NOT INDICATE NECESSARY OFFSETS, OBSTRUCTIONS OR STRUCTURAL CONDITIONS.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL THE WORK IN SUCH A MANNER THAT IT WILL BE AT THE HIGHEST ELEVATION POSSIBLE, CONFORM TO THE STRUCTURE, AVOID OBSTRUCTIONS, MAINTAIN HEADROOM, LEAVE ADEQUATE CLEARANCES FOR LIGHT FIXTURES, RETURN AIR PATHWAYS, MAINTENANCE AND REPAIRS, AND PROVIDE CLEARANCE AND ACCESS AS REQUIRED BY CODES. NOTHING SHALL BE INSTALLED BELOW CEILING LEVEL WITHOUT ARCHITECT'S WRITTEN CONSENT.
3. ABOVE ITEMS TO BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
4. PROCEED AS RAPIDLY AS THE BUILDING CONSTRUCTION WILL PERMIT.
5. THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP OPENINGS TO EXCLUDE DIRT UNTIL FINAL CONNECTIONS HAVE BEEN MADE.
6. CUT MATERIALS ACCURATELY, WORK INTO PLACE WITHOUT SPRINGING OR FORCING, PROPERLY CLEAR WINDOWS, DOORS AND OTHER OPENINGS. EXCESSIVE CUTTING OR OTHER WEAKENING OF THE BUILDING STRUCTURE WILL NOT BE PERMITTED.
7. MANUFACTURER'S DRAWINGS AND INSTRUCTIONS SHALL BE FOLLOWED IN ALL CASES WHERE THE MAKERS OF DEVICES AND EQUIPMENT FURNISH DIRECTIONS OR DETAILS NOT SHOWN ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS.
8. DRAWINGS ARE NOT INTENDED TO BE SCALED, BUT SHALL BE FOLLOWED WITH SUFFICIENT ACCURACY TO COORDINATE WITH OTHER WORK AND STRUCTURAL LIMITATIONS.
9. SEISMIC DESIGN: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ANCHORS, SUPPORTS AND CONNECTIONS OF MECHANICAL WORK TO THE BUILDING STRUCTURE TO PREVENT DAMAGE AS A RESULT OF AN EARTHQUAKE, INCLUDING MANUFACTURED EQUIPMENT, THE CONNECTION AND INTEGRITY OF SHOP FABRICATED AND FIELD FABRICATED MATERIALS AND EQUIPMENT. ALL SUPPORTS, EQUIPMENT AND CONNECTIONS THERETO SHALL BE DESIGNED TO CONFORM TO REQUIREMENTS OF THE CALIFORNIA ADMINISTRATIVE CODE, OR OTHER GOVERNING CODES.
10. ALL WORK SHALL BE PROPERLY SUPPORTED FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER, INDEPENDENT OF THE CEILING SUPPORT SYSTEM. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT DIRECT FASTENING OF SUPPORTS, FURNISH ADDITIONAL FRAMING.
11. ALL EQUIPMENT SHALL BE SECURELY FASTENED TO BUILDING CONSTRUCTION WITH APPROVED SUPPORTS.
12. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF DIFFUSERS, GRILLES, REGISTERS, AND THERMOSTATS (IF DEPICTED). IF THERMOSTATS ARE NOT DEPICTED SPECIFICALLY ON ARCHITECT'S DRAWINGS, OBTAIN ARCHITECT'S APPROVAL FOR LOCATIONS PRIOR TO INSTALLATION.
13. COORDINATE THE WORK OF THIS SECTION WITH THE WORK OF OTHER SECTIONS IN AMPLE TIME FOR PROPER INSTALLATION AND CONNECTION.
14. CAREFULLY CHECK SPACE REQUIREMENTS, INCLUDING SERVICING SPACE REQUIREMENTS, WITH OTHER SECTIONS TO ENSURE THAT ALL EQUIPMENT AND MATERIALS CAN BE INSTALLED IN THE SPACES ALLOTTED THERETO.
15. PREPARE DRAWINGS, ATTEND MEETINGS, OBTAIN ALL APPROVALS REQUIRED BY ALL AUTHORITIES HAVING JURISDICTION, CONDUCT REQUIRED TESTS AND OBTAIN REQUIRED PERMITS.

B. GENERAL:
1. PAINTING
a. PAINT:
1) BEST GRADE FOR ITS PURPOSE.
2) DELIVER IN ORIGINAL SEALED CONTAINERS.
3) APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4) COLORS: TO MATCH EXISTING OR AS SELECTED BY ENGINEER.
b. GALVANIZED IRON PRIMER.
c. HOT DIPPED GALVANIZED OR DIPPED IN ZINC CHROMATE.
d. ZINC CHROMATE WITH FINISH TO MATCH SURROUNDINGS.
2. CLEANING:
a. BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE.
b. PAINTED EXPOSED WORK SOILED OR DAMAGED: CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE.
c. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.
3. CUTTING AND PATCHING: AS REQUIRED FOR NEW WORK

1.15 CONTROL AND DEVICES

A. ALL CONTROL DEVICES NOT SPECIFIED TO BE FURNISHED AND INSTALLED UNDER THE ELECTRICAL SECTIONS SHALL BE PROVIDED UNDER THIS SECTION.

1.16 PROJECT CLOSE-OUT

A. AFTER FINAL OPERATION FOR INSPECTION AND ACCEPTANCE DELIVER ALL COPIES OF OPERATION INSTRUCTIONS, MAINTENANCE MANUALS AND PARTS DESCRIPTIONS TO THE ENGINEER.

B. ALL TOOLS SUPPLIED WITH THE EQUIPMENT FOR MAINTENANCE SHALL BE TAGGED AND TEMPORARILY SECURED TO THE UNIT, OR TURNED OVER TO THE OWNER.

1.17 ELECTRICAL

A. GENERAL:
1. ALL ELECTRICAL MATERIAL, EQUIPMENT, AND APPARATUS SPECIFIED HEREIN SHALL CONFORM TO THE REQUIREMENTS OF DIVISION 26. REFER TO THE RESPONSIBILITY MATRIX FOR ADDITIONAL INFOMRATION.
2. PROVIDE ALL MOTORS FOR EQUIPMENT SPECIFIED HEREIN. PROVIDE MOTOR STARTERS, CONTROLLERS, AND OTHER ELECTRICAL APPARATUS AND WIRING WHICH ARE REQUIRED FOR THE OPERATION OF THE EQUIPMENT SPECIFIED HEREIN.
3. SET AND ALIGN ALL MOTORS AND DRIVES IN EQUIPMENT SPECIFIED HEREIN.
4. SPECIFIC ELECTRICAL REQUIREMENTS (I.E., HORSEPOWER AND ELECTRICAL CHARACTERISTICS) FOR MECHANICAL EQUIPMENT ARE SCHEDULED ON THE DRAWINGS.

B. QUALITY ASSURANCE:
1. ELECTRICAL COMPONENTS AND MATERIALS SHALL BE UL OR ETL LISTED/LABELED AS SUITABLE FOR LOCATION AND USE - NO EXCEPTIONS.

C. STARTERS AND ELECTRICAL DEVICES:
1. MOTOR STARTER CHARACTERISTICS:
a. ENCLOSURES: NEMA 1, GENERAL PURPOSE ENCLOSURES WITH PADLOCK EARS, EXCEPT IN WET LOCATIONS SHALL BE NEMA 3R WITH CONDUIT HUBS.
b. TYPE AND SIZE OF STARTER SHALL BE AS RECOMMENDED BY MOTOR MANUFACTURER AND THE DRIVEN EQUIPMENT MANUFACTURER FOR APPLICABLE PROTECTION AND START UP CONDITION.
2. MANUAL SWITCHES SHALL HAVE PILOT LIGHTS AND ALL REQUIRED SWITCH POSITIONS FOR MULTI SPEED MOTORS. OVERLOAD PROTECTION: MELTING ALLOY OR BI METALLIC TYPE THERMAL OVERLOAD RELAYS, SIZED ACCORDING TO ACTUAL OPERATING CURRENT (FIELD MEASURED).
3. MAGNETIC STARTERS:
a. HEAVY DUTY, OIL RESISTANT, HAND-OFF-AUTO (HOA), OR AS INDICATED, AND PILOT LIGHTS, PROPERLY ARRANGED FOR SINGLE SPEED OR MULTI SPEED OPERATION AS INDICATED.
b. TRIP FREE THERMAL OVERLOAD RELAYS, EACH PHASE, SIZED ACCORDING TO ACTUAL OPERATING CURRENT (FIELD MEASURED).
c. INTERLOCKS, PNEUMATIC SWITCHES AND SIMILAR DEVICES AS REQUIRED FOR COORDINATION WITH CONTROL REQUIREMENTS OF DIVISION 23 CONTROLS SECTIONS.
d. BUILT IN PRIMARY AND SECONDARY FUSED CONTROL CIRCUIT TRANSFORMER, SUPPLIED FROM LOAD SIDE OF EQUIPMENT DISCONNECT.
e. EXTERNALLY OPERATED MANUAL RESET.
f. UNDER VOLTAGE RELEASE OR PROTECTION FOR ALL MOTORS OVER 20 HP.
4. MOTOR CONNECTIONS: LIQUID TIGHT, FLEXIBLE CONDUIT, EXCEPT WHERE PLUG IN ELECTRICAL CORDS ARE SPECIFICALLY INDICATED.

D. LOW VOLTAGE CONTROL WIRING:
1. GENERAL: 14 GAUGE, TYPE THHN, COLOR CODED, INSTALLED IN CONDUIT.
2. MANUFACTURER: GENERAL CABLE CORP., ALCAN CABLE, AMERICAN INSULATED WIRE CORP., SENATOR WIRE AND CABLE CO., OR SOUTHWIRE CO.

E. DISCONNECT SWITCHES:
1. FUSIBLE SWITCHES: FOR EQUIPMENT 1/2 HP OR LARGER, PROVIDE FUSED, EACH PHASE; HEAVY DUTY; HORSEPOWER RATED; SPRING LOADED QUICK MAKE, QUICK BREAK MECHANISM; DEAD FRONT LINE SIDE SHIELD; SOLDERLESS LUGS SUITABLE FOR COPPER OR ALUMINUM CONDUCTORS; SPRING REINFORCED FUSE CLIPS; ELECTRO SILVER PLATED CURRENT CARRYING PARTS; HINGED DOORS; OPERATING LEVER ARRANGED FOR LOCKING IN THE "OPEN" POSITION; ARC QUENCHERS; CAPACITY AND CHARACTERISTICS AS INDICATED.
2. NON FUSIBLE SWITCHES: FOR EQUIPMENT LESS THAN 1/2 HORSEPOWER, SWITCH SHALL BE HORSEPOWER RATED; TOGGLE SWITCH TYPE WITH THERMAL OVERLOAD QUANTITY OF POLES AND VOLTAGE RATING AS REQUIRED.

PART 2 - EXECUTION

2.1 GENERAL

A. WORKMANSHIP SHALL BE PERFORMED BY LICENSED JOURNEYMEN OR MASTER MECHANICS AND SHALL RESULT IN AN INSTALLATION CONSISTENT WITH THE BEST PRACTICES OF TRADES.

B. INSTALL WORK UNIFORM, LEVEL AND PLUMB, IN RELATIONSHIP TO LINES OF BUILDING. DO NOT INSTALL ANY DIAGONAL OR OTHERWISE IRREGULAR WORK UNLESS SO INDICATED ON DRAWINGS OR APPROVED BY ARCHITECT.

2.2 MANUFACTURER'S DIRECTIONS

A. FOLLOW MANUFACTURERS' DIRECTIONS AND RECOMMENDATIONS IN ALL CASES WHERE THE MANUFACTURERS OF ARTICLES USED ON THIS CONTRACT FURNISH DIRECTIONS COVERING POINTS NOT SHOWN ON THE DRAWINGS OR COVERED IN THESE SPECIFICATIONS.

2.3 INSTALLATION

A. COORDINATE THE WORK BETWEEN THE VARIOUS MECHANICAL SECTIONS AND WITH THE WORK SPECIFIED UNDER OTHER DIVISIONS. IF ANY COOPERATIVE WORK MUST BE ALTERED DUE TO LACK OF PROPER SUPERVISION OR FAILURE TO MAKE PROPER AND TIMELY PROVISIONS, THE ALTERNATIONS SHALL BE MADE TO THE SATISFACTION OF THE ENGINEER AND AT THE CONTRACTOR'S COST. COORDINATE WALL AND CEILING WORK WITH THE GENERAL CONTRACTOR, AND HIS SUBCONTRACTORS IN LOCATING CEILING AIR OUTLETS, WALL REGISTERS, ETC.

B. INSPECT ALL MATERIAL, EQUIPMENT, AND APPARATUS UPON DELIVERY AND DO NOT INSTALL ANY DAMAGED OR DEFECTED MATERIALS

2.4 ELECTRICAL REQUIREMENTS

A. MECHANICAL CONTRACTOR SHALL COORDINATE WITH DIVISION 26 WORK TO PROVIDE COMPLETE SYSTEMS AS REQUIRED TO OPERATE ALL MECHANICAL DEVICES INSTALLED UNDER THIS DIVISION OF WORK.

B. INSTALLATION OF ELECTRICAL CONNECTIONS: FURNISH, INSTALL, AND WIRE (EXCEPT AS MAY BE OTHERWISE INDICATED) ALL HEATING, VENTILATING, AIR CONDITIONING, PLUMBING AND FIRE PROTECTION, ETC., MOTORS AND CONTROLS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE AND IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH RECOGNIZED INDUSTRY PRACTICES, AND COMPLYING WITH APPLICABLE REQUIREMENTS OF UL, NEC, AND NECA'S “STANDARD OF INSTALLATION” TO ENSURE THAT PRODUCTS FULFILL REQUIREMENTS. CAREFULLY COORDINATE WITH WORK PERFORMED UNDER THE MECHANICAL DIVISION OF THESE SPECIFICATIONS.

C. DIVISION 23 HAS RESPONSIBILITIES FOR ELECTRICALLY POWERED OR CONTROLLED MECHANICAL EQUIPMENT WHICH IS SPECIFIED IN DIVISION 23 SPECIFICATIONS OR SCHEDULED ON DIVISION 23 DRAWINGS. THE SPECIFIC DIVISION OF RESPONSIBILITIES BETWEEN DIVISION 23 AND 26 FOR FURNISHING OR WIRING THIS EQUIPMENT IS AS FOLLOWS:
1. DIVISION 26 MECHANICAL RESPONSIBILITIES:
a. MOTORS: FURNISH AND INSTALL ALL MOTORS NECESSARY FOR MECHANICAL EQUIPMENT.
b. DISCONNECTS: PROVIDE THE DISCONNECTS WHICH ARE PART OF FACTORY WIRED DIVISION 23 EQUIPMENT. FACTORY WIRING TO INCLUDE WIRING BETWEEN MOTOR AND DISCONNECT OR COMBINATION STARTER/DISCONNECT.
c. CONTROLS: DIVISION 23 CONTRACTOR (INCLUDING THE TEMPERATURE CONTROLS SUBCONTRACTOR) IS RESPONSIBLE FOR THE FOLLOWING EQUIPMENT IN ITS ENTIRETY. THIS EQUIPMENT INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
1) CONTROL RELAYS NECESSARY FOR CONTROLLING DIVISION 23 EQUIPMENT.
2) CONTROL TRANSFORMERS NECESSARY FOR PROVIDING POWER TO CONTROLS FOR DIVISION 23 EQUIPMENT.
3) LINE VOLTAGE THERMOSTATS.
4) LOW OR NON-LOAD VOLTAGE CONTROL COMPONENTS.
5) REMOTE BULB THERMOSTATS.
6) NON-LIFE SAFETY RELATED VALVE OR DAMPER ACTUATORS.
7) FLOAT SWITCHES.
8) SOLENOID VALVES, EP AND PE SWITCHES.
9) REFRIGERATION CONTROLS. (DIVISION 26 PROVIDES POWER TO REFRIGERATION PANELS.)
10) PNEUMATIC THERMOSTATS
d. FIRE AND LIFE SAFETY EQUIPMENT:
1) FIRE/SMOKE DAMPERS: DIVISION 23 IS RESPONSIBLE FOR PROVIDING AND PHYSICALLY INSTALLING THE DAMPER AND FOR INSTALLING ANY REQUIRED CONTROL INTERFACE WIRING TO DIVISION 23 CONTROLS.
a) WHERE FIRE/SMOKE DAMPERS ARE PART OF AN INTEGRATED SMOKE CONTROL SYSTEM, DIVISION 23 IS RESPONSIBLE FOR PROVIDING DAMPERS WITH NECESSARY END SWITCHES FOR PROOF OF CLOSURE.
b) WHERE THESE DAMPERS ARE NOT PART OF AN INTEGRATED AREA WIDE SMOKE DETECTION SYSTEM, DIVISION 23 IS RESPONSIBLE FOR PROVIDING EACH FIRE/SMOKE DAMPER WITH A DEDICATED DUCT DETECTOR INSTALLED PER THE REQUIREMENTS OF THE BUILDING CODE. IF NOT INTEGRAL WITH THE DAMPER ASSEMBLY, THE DETECTOR IS TO BE INSTALLED BY DIV. 23 BUT WIRED FOR DAMPER CONTROL BY DIV. 26.
2) FIRE SPRINKLER SYSTEM: DIVISION 23 IS RESPONSIBLE FOR PROVIDING NECESSARY CONTROLS INCLUDING FLOW SWITCHES AND ALARM BELLS.
3) SPECIALIZED FIRE SUPPRESSION SYSTEMS: DIVISION 23 IS RESPONSIBLE FOR PROVIDING NECESSARY SYSTEM CONTROLS AND ANY REQUIRED CONTROL INTERFACE WIRING TO THESE CONTROLS. DIVISION 26 IS RESPONSIBLE FOR BRINGING POWER TO POINT OF CONNECTION WITH THE SYSTEM.

D. DIVISION 26 HAS RESPONSIBILITIES FOR ELECTRICALLY POWERED OR CONTROLLED MECHANICAL EQUIPMENT WHICH IS SPECIFIED IN DIVISION 23 SPECIFICATIONS OR SCHEDULED ON DIVISION 23 DRAWINGS. THE SPECIFIC DIVISION OF RESPONSIBILITIES BETWEEN DIVISION 23 AND 26 FOR FURNISHING OR WIRING THIS EQUIPMENT IS AS FOLLOWS:
1. DIVISION 26 ELECTRICAL RESPONSIBILITIES:
2. MOTORS: PROVIDE THE POWER WIRING FOR THE MOTORS.
3. DISCONNECTS: PROVIDE ALL DISCONNECTS NECESSARY FOR DIVISION 23 MECHANICAL EQUIPMENT WHICH ARE NOT PROVIDED AS PART OF FACTORY WIRED DIVISION 23 EQUIPMENT. PROVIDE POWER WIRING TO ALL DISCONNECTS. IN ADDITION PROVIDE POWER WIRING BETWEEN MOTOR AND DISCONNECT WHEN THE DISCONNECT IS NOT FACTORY INSTALLED. SEE ALSO VARIABLE FREQUENCY DRIVE ABOVE FOR SPECIAL WIRING REQUIREMENTS.
a. CONTROLS: DIVISION 26 CONTRACTOR IS RESPONSIBLE FOR PROVIDING POWER TO CONTROL PANELS AND CONTROL CIRCUIT OUTLETS.
b. FIRE AND LIFE SAFETY EQUIPMENT:
1) FIRE/SMOKE DAMPERS: DIVISION 26 IS RESPONSIBLE FOR POWER WIRING TO THE DAMPER AND AS FOLLOWS:
a) WHERE THESE DAMPERS ARE PART OF AN INTEGRATED SMOKE CONTROL SYSTEM DIVISION 26 IS RESPONSIBLE FOR PROVIDING THE DETECTORS AND FOR ALL FIRE DETECTION SYSTEM WIRING NECESSARY TO INTEGRATE DAMPERS AND RELATED END SWITCHES INTO THE SYSTEM.
b) WHERE THESE DAMPERS ARE NOT PART OF AN INTEGRATED AREA WIDE SMOKE DETECTION SYSTEM, DIVISION 23 IS RESPONSIBLE FOR PROVIDING EACH FIRE/SMOKE DAMPER WITH A DEDICATED DUCT DETECTOR INSTALLED PER THE REQUIREMENTS OF THE BUILDING CODE. (SEE SECTION 15880). IF NOT INTEGRAL WITH THE DAMPER ASSEMBLY, THE DETECTOR IS TO BE INSTALLED BY DIV. 23 BUT WIRED FOR DAMPER CONTROL BY DIV. 26.
2) FIRE SPRINKLER SYSTEM: DIVISION 26 IS RESPONSIBLE FOR PROVIDING POWER WIRING TO FIRE PROTECTION CONTROLS INCLUDING FLOW SWITCHES AND ALARM BELLS.
3) SPECIALIZED FIRE SUPPRESSION SYSTEMS: DIVISION 26 IS RESPONSIBLE FOR PROVIDING POWER WIRING TO SUPPRESSION SYSTEM AND ITS CONTROLS.
4. COORDINATE WITH OTHER WORK, INCLUDING WIRES/CABLES, RACEWAY AND EQUIPMENT INSTALLATION, AS NECESSARY TO PROPERLY INTERFACE INSTALLATION OF ELECTRICAL CONNECTIONS FOR EQUIPMENT WITH OTHER WORK.
5. CONNECT ELECTRICAL POWER SUPPLY CONDUCTORS TO EQUIPMENT CONDUCTORS IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND WIRING DIAGRAMS. MATE AND MATCH CONDUCTORS OF ELECTRICAL CONNECTIONS FOR PROPER INTERFACE BETWEEN ELECTRICAL POWER SUPPLIES AND INSTALLED EQUIPMENT.
6. MAINTAIN EXISTING ELECTRICAL SERVICE AND FEEDERS TO OCCUPIED AREAS AND OPERATIONAL FACILITIES, UNLESS OTHERWISE INDICATED, OR WHEN AUTHORIZED OTHERWISE IN WRITING BY OWNER, OR ARCHITECT/ENGINEER. PROVIDE TEMPORARY SERVICE DURING INTERRUPTIONS TO EXISTING FACILITIES. WHEN NECESSARY, SCHEDULE MOMENTARY OUTAGES FOR REPLACING EXISTING WIRING SYSTEMS WITH NEW WIRING SYSTEMS. WHEN THAT “CUTTING-OVER” HAS BEEN SUCCESSFULLY ACCOMPLISHED, REMOVE, RELOCATE, OR ABANDON EXISTING WIRING AS INDICATED.
7. COVER SPLICES WITH ELECTRICAL INSULATING MATERIAL EQUIVALENT TO, OR OF GREATER INSULATION RESISTIVITY RATING, THAN ELECTRICAL INSULATION RATING OF THOSE CONDUCTORS BEING SPLICED.
8. PREPARE CABLES AND WIRES, BY CUTTING AND STRIPPING COVERING ARMOR, JACKET, AND INSULATION PROPERLY TO ENSURE UNIFORM AND NEAT APPEARANCE WHERE CABLES AND WIRES ARE TERMINATED. EXERCISE CARE TO AVOID CUTTING THROUGH TAPES WHICH WILL REMAIN ON CONDUCTORS. ALSO AVOID “RINGING” COPPER CONDUCTORS WHILE SKINNING WIRE.

E. MOTORS AND MOTOR CONTROL EQUIPMENT: CONFORM TO THE STANDARDS OF THE NEMA. EQUIP MOTORS WITH MAGNETIC OR MANUAL LINE STARTERS WITH OVERLOAD PROTECTION. MOTOR STARTERS AND LINE VOLTAGE CONTROLS SHALL BE INSTALLED UNDER ELECTRICAL SECTION BUT LOCATED AND COORDINATED AS REQUIRED UNDER THIS SECTION OF THE WORK. STARTERS SHALL BE COMBINATION TYPE WITH NON_FUSIBLE DISCONNECT SWITCHES. ALL SINGLE PHASE FRACTIONAL HORSEPOWER MOTORS SHALL HAVE BUILT_IN OVERLOAD PROTECTION.

SECTION 230529 - HANGERS AND SUPPORTS

A. PIPE HANGERS, SUPPORTS, AND GUIDES:
1. GENERAL:
a. HANGERS AND SUPPORTS TO BE DESIGNED AND INSTALLED PER SMACNA GUIDELINES.
b. ASSURE ADEQUATE SUPPORT FOR PIPE AND CONTENTS.
c. PROVIDE RIGID INSULATION SECTION AT ALL HANGER SUPPORTS.
d. PROVIDE SEISMIC RESTRAINTS TO MEET LOCAL CODES.
e. PREVENT VIBRATION OR SWAYING.
f. PROVIDE SLEEVING FOR ALL PIPING THAT PENETRATES FLOOR SLABS.
g. PROVIDE FOR EXPANSION AND CONTRACTION.
h. SUPPORTS OF WIRE, ROPE, WOOD, CHAIN, STRAP PERFORATED BAR OR ANY OTHER MAKESHIFT DEVICE NOT PERMITTED.
i. COMPLY WITH APPLICABLE REQUIREMENTS AT ANSI B31.1.0 AND B31.2 FOR PIPING.
j. SUPPORT PIPING INDEPENDENTLY SO THAT EQUIPMENT IS NOT STRESSED BY PIPING WEIGHT OF EXPANSION.
k. HANGERS AND SUPPORTS SHALL HAVE MINIMUM SAFETY FACTOR OF THREE (3), BASED ON ULTIMATE TENSILE OR COMPRESSIVE STRENGTH, AS APPLICABLE, OF MATERIAL USED.
l. PRIME COAT EXPOSED STEEL HANGERS AND SUPPORTS. HANGERS AND SUPPORTS LOCATED IN CRAWL SPACES, PIPES SHAFTS AND SUSPENDED CEILING SPACES ARE NOT CONSIDERED EXPOSED
2. HORIZONTAL PIPING, EXCEPT AS NOTED:
a. ADJUSTABLE CLEVIS TYPE AND ROD: ALL SERVICES AT OR BELOW 250 DEG F.
b. ROLLERS OR SLIDE BASES:PIPE STAND, BRACKET, TRAPEZE OR OTHER EQUIVALENT STRUCTURAL SUPPORT. ROLLERS NOT REQUIRED WHERE SPRING HANGERS ARE CALLED FOR.
3. TRAPEZE HANGERS
a. NOT PERMITTED FOR:FIRE AND SPRINKLER PIPING.
b. GUIDE INDIVIDUAL PIPES ON TRAPEZES WITH 1/4 INCH U-BOLT OR SUPERSTRUT 702 PIPE CLAMP. INSTALL THERMAL HANGER SHIELD AT EACH SUPPORT POINT.
4. INSTALL PIPE ISOLATORS BETWEEN HANGERS AND:
a. UNINSULATED COPPER TUBING.
b. WHEREVER ANY PIPE REQUIRES SOUND AND VIBRATION ISOLATION.
5. MISCELLANEOUS STEEL: PROVIDE MISCELLANEOUS STEEL MEMBERS, BEAMS, BRACKETS, ETC., FOR SUPPORT OF WORK IN THIS DIVISION UNLESS SPECIFICALLY INCLUDED IN OTHER DIVISIONS.
6. PIPE SUPPORT SPACING: PER IMC SECTION 305.

B. DUCT HANGERS AND SUPPORTS
1. GENERAL.
a. SUPPORT HORIZONTAL DUCTS WITH HANGERS OF SIZE AND SPACING AS INDICATED IN PERTINENT SMACNA DUCT CONSTRUCTION STANDARDS. SEAL AROUND ALL SCREWS.
b. PROVIDE SEISMIC CONSTRAINTS TO MEET LOCAL CODES.
2. HORIZONTAL DUCT SUPPORTS:
a. INSTALL HANGERS AT EACH CHANGE IN DIRECTION OF DUCT.
b. STRAP HANGERS:
2) EXTEND STRAP DOWN BOTH SIDES OF DUCTS.
3) TURN UNDER BOTTOM ONE INCH MINIMUM.
4) METAL SCREW HANGERS TO:
a) BOTTOM OF DUCT.
b) UPPER AND LOWER SIDES OF DUCTS.
c) NOT MORE THAN 12 INCHES ON CENTER.
5) ANGLE HANGERS:
a) PROVIDE ANGLE HANGERS FORMED BY EXTENDED VERTICAL BRACING ANGLES.
3. RECTANGULAR DUCT SUPPORT SPACING:
a. HORIZONTAL DUCTS: 10'
b. VERTICAL DUCTS: 12'
c. TRAPEZE DUCTS: 8'
4. ROUND DUCT SUPPORT SPACING:
a. HORIZONTAL DUCTS (<40"□ DIAMETER): 10'
b. VERTICAL DUSTS: 12'
c. TRAPEZE DUCTS: 8'

C. HVAC EQUIPMENT
1. GENERAL:
a. ALL FANS SHALL BE MOUNTED ON SPRING VIBRATION ISOLATORS.
b. COORDINATE LOCATION OF ALL EQUIPMENT WITH BUILDING OWNER.

D. ATTACHMENT TO STRUCTURE:
1. STEEL BEAM ANCHORS.
a. APPROVED BEAM OR CHANNEL CLAMPS.
b. DO NOT CUT OR WELD TO STRUCTURAL STEEL WITHOUT WRITTEN APPROVAL OF OWNER.
c. OTHER METHODS AS DETAILED ON DRAWINGS.
2. STUD WALL SIDE-WALL SUPPORTS:
a. TOGGLE BOLTS.
b. STUDS WELDED TO STRUCTURAL STUDS.
c. LAG SCREWS INTO WOOD BACKING.
d. OTHER METHODS.
3. SUPPORT SPREADERS:
a. INSTALL SPREADERS SPANNING BETWEEN STRUCTURAL MEMBERS WHEN HANGERS FALL BETWEEN THEM, AND HANGER LOAD IS TOO GREAT FOR SLAB OR DECK ATTACHMENT.
b. SPREADERS MAY BE ONE OF METHODS LISTED BELOW, OR COMBINATION OF BOTH AS REQUIRED.
1) FABRICATED FROM STRUCTURAL CHANNEL:END FITTINGS BOLTED OR WELDED. SECURE TO STRUCTURAL MEMBERS AS REQUIRED BY CONSTRUCTION AND AS APPROVED BY STRUCTURAL ENGINEER.
2) FORMED CHANNELS WITH FITTINGS, SIMILAR TO SUPERSTRUT: SUBMIT MANUFACTURER'S CALCULATIONS FOR INSTALLATION.

SECTION 230553 - IDENTIFICATION

A. AN IDENTIFICATION LABEL SHALL BE PROVIDED FOR THE FOLLOWING TYPES OF EQUIPMENT:
1. ROOF TOP UNITS.
2. EXHAUST FANS.
3. MAKEUP AIR UNITS.
4. SPLIT SYSTEMS.
5. CONDENSING UNITS.
6. KITCHEN HOOD AND EXHAUST SYSTEMS.

B. IDENTIFICATION LABELS SHALL BE BY SETON, OR EQUIVALENT. PROVIDE LABELS & FLOW ARROWS ON ALL DUCT AND PIPING. @ 10' INTERVALS.

C. TEMPERATURE CONTROL PANELS SHALL BE IDENTIFIED WITH ENGRAVED PHENOLIC NAMEPLATES AND EACH CONTROL COMPONENT SHALL BE IDENTIFIED WITH ITS SETPOINTS.

D. ALL MECHANICAL EQUIPMENT INSTALLED ABOVE SUSPENDED CEILINGS SHALL BE MARKED ON THE BOTTOM WITH ITS EQUIPMENT NUMBER MATCHING THE EQUIPMENT SCHEDULE AND CONTROL GRAPHICS.

E. ALL LABELING OF EXTERIOR EQUIPMENT SHALL USE ENGRAVED PHENOLIC LABELS.

F. IDENTIFICATION SHALL CONFORM TO ANSI/ASME A13.1 WHERE APPLICABLE.

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

A. GENERAL:
1. TAB SHALL BE PERFORMED BY NATIONAL TAB, NORTH KANSAS CITY, MO (WILL TURNBOUGH 314-964-6244). NO EXCEPTIONS.
2. ADJUSTMENT: EACH PIECE OF EQUIPMENT AND ALL OF THE SYSTEMS SHALL BE ADJUSTED TO INSURE PROPER FUNCTIONING OF ALL CONTROLS, AND SHALL BE LEFT IN OPERATING CONDITION. CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE EXISTING MOTOR SHEAVES AND FAN BELTS AS REQUIRED.
3. PRELIMINARY OPERATION: THE OWNER RESERVES THE RIGHT TO OPERATE ANY SYSTEMS OR EQUIPMENT PRIOR TO FINAL COMPLETION AND ACCEPTANCE OF THE WORK. SUCH PRELIMINARY OPERATION SHALL NOT BE CONSTRUED AS AN ACCEPTANCE OF ANY WORK.

B. AIR DISTRIBUTION SYSTEMS:
1. BALANCE AND ADJUST AIR DISTRIBUTION SYSTEM TO QUANTITIES INDICATED ON DRAWINGS IN ACCORDANCE WITH ASSOCIATED AIR BALANCE COUNCIL (AABC) MANUAL, LATEST EDITION.
2. BALANCING AND TESTING SHALL BE PERFORMED AND SUPERVISED BY A CERTIFIED INDEPENDENT FIRM SPECIALIZING IN TESTING AND BALANCING. FIRM SHALL BE AN APPROVED TAB CONTRACTOR. TEST REPORTS SHALL BE SUBMITTED IN BOUND FOLDERS AND ON AABC TYPE REPORT FORMS. ALL AIR INLET/OUTLET SHALL BE IDENTIFIED BY DESIGNATIONS ON DRAWINGS.
3. ALL TESTING DATA SHALL BE PROVIDED IN A MICROSOFT EXCEL COMPATIBLE FORMAT.
4. DIFFUSER AIR DELIVERY SHALL NOT BE LESS THAN NOR EXCEED BY MORE THAN 10% THE AIR DELIVERY INDICATED ON THE PLAN.
5. VOLUME DAMPERS IN AIR INLETS/OUTLETS SHALL BE USED ONLY FOR MINOR ADJUSTMENT (LESS THAN 10% OF SPECIFIED CFM WHEN AVAILABLE.)
6. CONTRACTOR SHALL PROVIDE MANUAL VOLUME DAMPERS IN DUCTS AS REQUIRED.
7. UPON COMPLETION OF THE INSTALLATION, CONTRACTOR SHALL REBALANCE ANY AIR DISTRIBUTION SYSTEM AFFECTED BY THE RENOVATION, INCLUDING TERMINAL AIR UNITS AND AIR OUTLETS.

C. ADDITIONAL NOTES:
1. KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
2. KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
3. RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT.
4. OWNER TO BE PROVIDED WITH BALANCING REPORT.

SECTION 230700 - HVAC INSULATION

A. MINERAL-FIBER BLANKET INSULATION: MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 553, TYPE II AND ASTM C 1290, TYPE III WITH FACTORY-APPLIED FSK JACKET. KNAUF ECO FRIENDLY OR JOHNS MANVILLE (FORMALDEHYDE FREE).

B. CLOSED CELL PIPE INSULATION: ASTM C 534 TYPE I. AEROFLEX OR ARMACELL.

C. INSULATING CEMENTS: MINERAL-FIBER, HYDRAULIC-SETTING INSULATING AND FINISHING CEMENT: COMPLY WITH ASTM C 449/C 449M.

D. MINERAL-FIBER ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A. USE ADHESIVE THAT HAS A VOC CONTENT OF 80 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

E. FSK AND PVDC JACKET ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A FOR BONDING INSULATION JACKET LAP SEAMS AND JOINTS.

F. FSK AND METAL JACKET FLASHING SEALANTS:
1. MATERIALS SHALL BE COMPATIBLE WITH INSULATION MATERIALS, JACKETS, AND SUBSTRATES.
2. FIRE- AND WATER-RESISTANT, FLEXIBLE, ELASTOMERIC SEALANT.
3. SERVICE TEMPERATURE RANGE: MINUS 40 TO PLUS 250 DEG F.
4. COLOR: ALUMINUM.
5. FOR INDOOR APPLICATIONS, USE SEALANTS THAT HAVE A VOC CONTENT OF 250 G/L OR LESS WHEN CALCULATED ACCORDING TO 40 CFR 59, SUBPART D (EPA METHOD 24).

G. FACTORY APPLIED FSK JACKET: ALUMINUM-FOIL, FIBERGLASS-REINFORCED SCRIM WITH KRAFT-PAPER BACKING; COMPLYING WITH ASTM C 1136, TYPE II.

H. FIELD APPLIED ALUMINUM JACKET: ALUMINUM ROLL-STOCK WITH 3-MIL MOISTURE BARRIER; COMPLYING WITH ASTM C1729. PROVIDE FACTORY-FABRICATED COVERS FOR FITTINGS.

I. TYPE OF INSULATION
1. DUCT INSULATION: MINERAL-FIBER BLANKET INSULATION. R-6 VALUE. PROVIDE WEATHERPROOF JACKET ON OUTDOOR DUCT. EXTERNALLY INSULATE ALL DUCT WHEN CONCEALED ABOVE CEILING SPACES.
2. PIPING: PROVIDE THICKNESS PER IMC TABLE 403.2.10
a. CONDENSATE: CLOSED-CELL TYPE.
b. REFRIGERANT PIPING: CLOSED-CELL PIPE INSULATION. PROVIDE WEATHERPROOF JACKET ON OUTDOOR PIPING.

J. ADDITIONAL PIPING INSULATION REQUIREMENTS
1. ALL REFRIGERANT COPPER LINES MUST BE FREE OF EXTRANEOUS CHEMICALS SUCH AS CORROSIVE CLEANERS OR BUILDING MATERIALS' DUST PRIOR TO THE INSTALLATION OF THE INSULATION. THE INSULATION MUST BE CLEAN AND DRY PRIOR TO INSTALLATION.
2. REFRIGERANT PIPE SHALL BE SEALED WHILE SLIPPING ON INSULATION TO PREVENT FOREIGN MATTER FROM ENTERING THE TUBE.

SECTION 230800 - COMMISSIONING

A. MECHANICAL CONTRACTOR SHALL ALLOCATE ADEQUATE TIME IN THEIR PROPOSAL TO ASSIST IN ALL COMMISSIONING ACTIVITIES AS PRESCRIBED. CONSULT WITH THE GENERAL CONTRACTOR TO DETERMINE THE SPECIFIC COMMISSIONING SCOPE OF WORK.

B. COMMISSIONING WILL BE PERFORMED FOR THE FOLLOWING SYSTEMS:
1. AIR HANDLING EQUIPMENT INCLUDING PACKAGED EQUIPMENT AND EXHAUST FANS.
2. SPLIT SYSTEMS.
3. KITCHEN HOOD, EXHAUST, AND MAKEUP AIR SYSTEMS.
4. CONTROLS.

SECTION 232300 - REFRIGERANT PIPING

A. COPPER PIPE AND FITTINGS
1. COPPER TYPE: ASTM B 280, TYPE L (STRAIGHT LENGH) ACR.
2. WROUGHT-COPPER FITTINGS: ASME B16.22.
3. WROUGHT-COPPER UNIONS: ASME B16.22.
4. BRAZING FILLER METALS: AWS A5.8.

B. PIPE JOINT CONSTRUCTION
1. BRAZED JOINTS: CONSTRUCT JOINTS ACCORDING TO AWS'S "BRAZING HANDBOOK," CHAPTER "PIPE AND TUBE."

C. HANGERS AND SUPPORTS
1. PIPING HANGERS AND SUPPORTS MUST ACCOMMODATE EXPANSION AND CONTRACTION, VIBRATION, DEAD LOAD OF PIPING AND ITS CONTENTS, AND SEISMIC-BRACING REQUIREMENTS.

D. INSTALL HANGERS FOR COPPER TUBING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD SIZES:
1. NPS 1/2: MAXIMUM SPAN, 60 INCHES; MINIMUM ROD SIZE, 1/4 INCH.
2. NPS 5/8: MAXIMUM SPAN, 60 INCHES; MINIMUM ROD SIZE, 1/4 INCH.
3. NPS 1: MAXIMUM SPAN, 72 INCHES; MINIMUM ROD SIZE, 1/4 INCH.

E. SUPPORT MULTI-FLOOR VERTICAL RUNS AT LEAST AT EACH FLOOR.

SECTION 233113 - METAL DUCTS

A. GENERAL: ALL SAFING, DUCTS, DAMPERS, ACCESS DOORS, JOINTS, HANGERS, STIFFENERS, FIRE DAMPERS AND FIRE RETARDING MATERIALS, IN ACCORDANCE WITH REQUIREMENTS OF SMACNA, "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION, AND ALL OTHER AUTHORITIES HAVING JURISDICTION AND AS DESCRIBED HEREIN. ALL SHEET METAL WORK SHALL HAVE A PRESSURE CLASSIFICATION AS FOLLOWS:
1. SUPPLY DUCT BETWEEN MAIN LOOP AND INLET TO TERMINAL AIR UNIT - 4 INCHES W.G.
2. SUPPLY DUCTS DOWNSTREAM OF TERMINAL AIR UNITS, AIR HANDLING UNITS AND FANS -2 INCHES W.G.
3. RETURN AND EXHAUST AIR DUCTS - 2 INCHES W.G.

B. DUCTWORK: UNLESS OTHERWISE SPECIFIED.
1. COLD ROLLED "COMMERCIAL" QUALITY HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM NO. A653. G90.
2. DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
3. FITTINGS: SAME GAUGE AND CONSTRUCTION AS DUCTS. ELBOWS SHALL HAVE CENTERLINE RADIUS NOT LESS THAN 1.5 TIMES WIDTH.
4. DUCT SUPPORTS AS REQUIRED.
5. DUCTS WITH TRANSVERSE AND LONGITUDINAL BRACINGS IN ACCORDANCE WITH SMACNA.
6. DUCTWORK SHALL BE SEALED. JOINTS AND SEAMS SHALL COMPLY WITH SECTION603.9 OF THE IMC.

C. KITCHEN COOKING HOOD AND GREASE EXHAUST.
1. TYPE I GREASE HOOD EXHAUST DUCTWORK OF MINIMUM 16 GAUGE COLD ROLLED STEEL, OR 18 GA. STAINLESS STEEL WITH LIQUID TIGHT WELDS OR AS NOTED ON PLANS ZERO CLEARANCE U.L. LISTED PREFABRICATED ROUND GREASE DUCT, WITH ACCESS PANELS FOR GREASE CLEANING AS REQUIRED BY NFPA 96 AND LOCAL CODES.
2. SLOPE DUCT BACK TOWARDS HOOD AT MINIMUM OF 1/4" PER LINEAL FOOT MAINTAINING 18" CLEARANCE TO COMBUSTIBLE MATERIALS WHERE REQUIRED.
3. INSTALL GREASE DUCTS IN AN APPROVED FIRE-RATED ENCLOSURE SEPARATED FROM THE EXHAUST DUCT BY A MINIMUM OF 6" AND MAXIMUM 12" VENTILATED ENCLOSURE TO THE OUTSIDE AIR IF REQUIRED BY CODE.
4. AS AN OPTION, IF APPROVED BY LOCAL CODES, PROVIDE AN APPROVED WRAP SYSTEM IN LIEU OF THE RATED DUCT ENCLOSURE SYSTEM. DUCT WRAP SYSTEM SHALL MEET UL REQUIREMENTS FOR GREASE DUCT ENCLOSURES.

SECTION 233300 - AIR DUCT ACCESSORIES

A. ACCESS DOORS:
1. FURNISH ACCESS DOOR OF SUFFICIENT SIZE AS REQUIRED, FOR ACCESS, INSPECTION, MAINTENANCE, AND REPLACEMENT TO ALL INSTRUMENTS, CONTROLS AND EQUIPMENT.

B. DAMPERS:
1. FURNISH ALL DAMPERS WITH LOCKING MECHANISM NECESSARY FOR PROPER CONTROL AND BALANCING OF AIR DISTRIBUTION AS FOLLOWS:
a. ALL DUCTS WHICH SPLIT IN 2 OR MORE BRANCHES TO SERVE SUPPLY DIFFUSERS.
b. AT EACH SUPPLY AND RETURN BRANCH DUCT, AS FAR AWAY FROM EACH OUTLET AND INLET AS POSSIBLE.
c. ADJUSTABLE AND ACCESSIBLE.
d. ADDITIONALLY AS INDICATED.

C. FIRE/SMOKE DAMPERS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH NFPA STANDARD 90A AND UL STANDARD 555 AND SHALL BE SO LABELED WITH A PERMANENT IDENTIFICATION. FIRE/SMOKE DAMPER SHALL BE LEAKAGE CLASS II, RATED FOR DYNAMIC USE, 165 DEG. FUSIBLE LINK, PROVIDED WITH FACTORY ELECTRIC ACTUATOR AND FACTORY INSTALLED AND PREWIRED DUCT MOUNTED SMOKE DETECTOR & REMOTE CEILING MTD. LED ANUNCIATOR. FIRE/SMOKE DAMPERS SHALL BE CSFM LISTED FOR BOTH FIRE AND SMOKE. RUSKIN OR APPROVED EQUAL.

D. TURNING VANES: GALVANIZED STEEL, DOUBLE THICKNESS TURNING VANES WITH 2 IN. INSIDE RADIUS FOR ALL SQUARE ELBOWS, UNLESS OTHERWISE NOTED.

E. DUCT MTD. SMOKE DETECTORS SHALL BE "SYSTEM SENSOR" DH400 OR EQUIVALENT. PROVIDE SHEET METAL COVER FOR EXTERNALLY MOUNTED DETECTORS.

F. MOTORIZED DAMPERS SHALL BE 'RUSKIN' CD-50 LOW LEAKAGE TYPE WITH ACTUATORS BY 'BELIMO' UNLESS OTHERWISE NOTED

SECTION 233713 - DIFFUSERS, REGISTERS AND GRILLES

A. ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE OF TYPE AND CAPACITY AS INDICATED ON DRAWINGS. STEEL AND/OR EXTRUDED ALUMINUM CONSTRUCTION WITH BAKED ENAMEL FINISH COLOR AS SELECTED BY ARCHITECT. DIFFUSERS TO HAVE NO VISIBLE SCREW HEADS OR CONNECTORS. RETURN GRILLES AND EXHAUST REGISTERS SIMILAR TO SUPPLY.

B. BALANCING DAMPERS SHALL BE PROVIDED IN THE BRANCH DUCT AS FAR AS POSSIBLE FROM ALL SUPPLY AND RETURN AIR DEVICES. THESE SHALL BE ADJUSTABLE AND ACCESSIBLE.

C. OUTLETS FURNISHED SHALL PROVIDE FOR THE REQUIRED CAPACITY WITH NO APPARENT DRAFTS OR EXCESSIVE AIR MOVEMENT. OUTLETS WHICH CAUSE EXCESSIVE AIR MOVEMENT OR DRAFTS SHALL BE REPLACED AT NO COST TO THE OWNER.

D. SEE PLANS AND SCHEDULES FOR DIFFUSER TYPES AND MFR.

E. THE NOISE LEVEL PRODUCED SHALL COMPLY WITH ALL REQUIREMENTS OF THE ACOUSTICAL SPECIFICATION STATED HEREIN. A REPRESENTATIVE SAMPLE SHALL BE TESTED IN ACCORDANCE WITH THE PROCEDURE SPECIFIED HEREIN IN ORDER TO DEMONSTRATE SUCH COMPLIANCE. ALL MEASUREMENTS SHALL BE MADE IN ACCORDANCE WITH AIR DIFFUSION COUNCIL TEST CODE NO. 1062R3, AND ASHRAE STANDARD 36-72. TEST CONDITIONS SHALL BE IN ACCORDANCE WITH THE APPLICABLE STANDARDS. THE TEST RESULTS SHALL BE CERTIFIED BY THE TESTING AGENCY AND SUBMITTED FOR APPROVAL. THE TEST REPORT SHALL INCLUDE A COMPLETE DESCRIPTION OF THE TEST CONDITIONS, MEASUREMENT PROCEDURE AND SAMPLE CALCULATION.

F. THE SOUND POWER LEVEL (PWL RE 10-12 WATTS) OF EACH TYPE AND SIZE OF DIFFUSER SPECIFIED SHALL NOT EXCEED THE VALUES AS SCHEDULED ON DRAWINGS.

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REVISION

△	DATE	DESCRIPTION
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A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS:
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OTHON ESTRADA, JR.
M36244

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SHEET NAME:
MECHANICAL SPECIFICATIONS

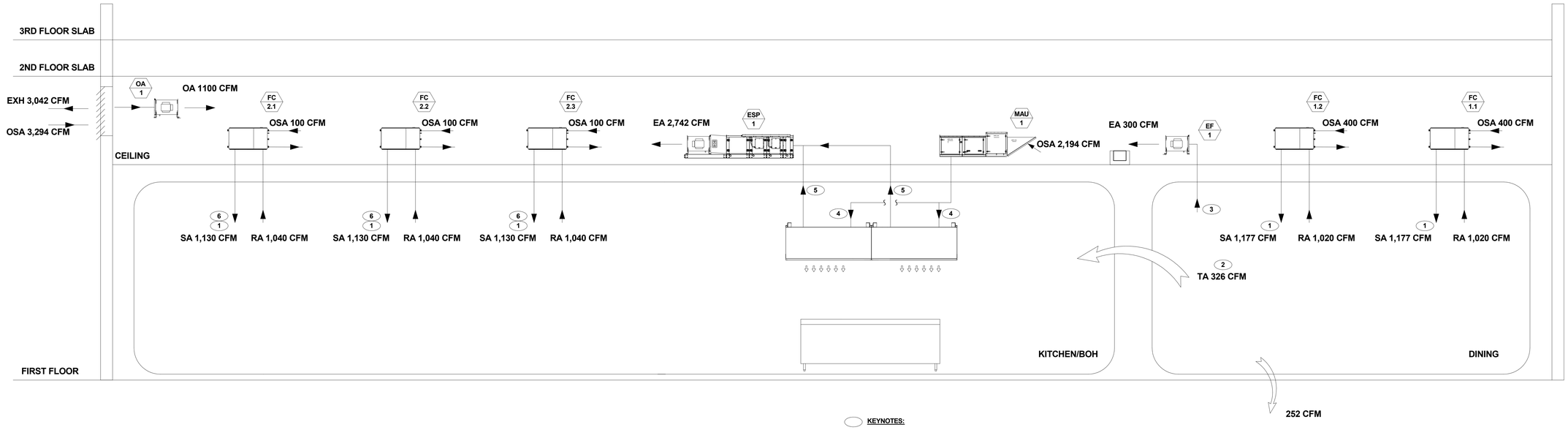
DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: NTS

SHEET NO:
M590

AIR BALANCE TABLE AT DESIGN (7)

	HVAC SUPPLY (CFM)	HVAC RETURN (CFM)	HVAC OSA (CFM)	HOOD OSA (CFM)	HOOD EXHAUST (CFM)	GENERAL EXHAUST (CFM)	AREA SERVED
CU-1/ FC-1.1, 1.2	5,100	4,300	800	-	-	-	DINING
CU-2/ FC-2.1, 2.2, 2.3	3,720	3,420	300	-	-	-	BOH
MUA-1	-	-	-	2,194	-	-	KEH-1/2
ESP-1	-	-	-	-	2,742	-	KEH-1/2
EF-1	-	-	-	-	-	300	RESTROOMS
TOTAL	8,820	7,720	1,100	2,194	2,742	300	
OSA			3,294		-3,042		

TOTAL PRESSURIZATION DIFFERENCE = +252



KEYNOTES:

1. TOTAL OF AIR INLETS / OUTLETS.
2. TRANSFER AIR TO KITCHEN FROM ADJACENT SPACE.
3. TOTAL OF RESTROOM EXHAUST FANS.
4. MAKE UP AIR TO SUPPLY KITCHEN HOOD.
5. KITCHEN HOOD EXHAUST.
6. INCLUDES SUPPLY TO KITCHEN HOOD.
7. KITCHEN HVAC EQUIPMENT TO ALL BE ELECTRONICALLY INTERLOCKED. SEE KITCHEN EQUIPMENT WIRING DETAILS ON SHEETS M606-M808.

MECHANICAL AIRFLOW DIAGRAM (1)
SCALE: NTS

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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

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SHEET NAME: **MECHANICAL AIRFLOW DIAGRAMS**

DATE: 11/08/21 | PROJECT NO: SHK-21-008

DRAWN: SK | SCALE: NTS

SHEET NO: **M601**

GENERAL

1. PROVIDE ALL EQUIPMENT AND ACCESSORIES REQUIRED FOR A COMPLETE AND FUNCTIONAL CONTROL SYSTEM.
2. PROVIDE ALL NEW DDC CONTROLLERS, IOMS, ACTUATORS, CONTROL VALVES, SENSORS, HUMIDISTATS, AND THERMOSTATS.
3. ALL EQUIPMENT AND COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, LOCAL CODE, AND OWNER'S REQUIREMENTS.
4. COORDINATE WITH MECHANICAL AND ELECTRICAL CONTRACTORS FOR EXACT LOCATIONS OF EQUIPMENT FOR CONNECTION TO CONTROL SYSTEM.

VRF SYSTEMS

1. ALL HVAC MECHANICAL UNITS SHALL SHUT DOWN UPON ALARM FROM KITCHEN EXHAUST HOOD FIRE EXTINGUISHING SYSTEM.
2. DURING OCCUPIED HOURS, FAN COIL UNITS SUPPLY FANS SHALL RUN CONTINUOUSLY.
3. CONTROLS CONSIST OF A MICROPROCESSOR-BASED CONTROL SYSTEM WHICH CONTROLS SPACE TEMPERATURE, DETERMINE OPTIMUM FAN SPEED, AND RUN SELF DIAGNOSTICS..

MAU-1

1. MAKE-UP UNIT SUPPLY AIR FAN SHALL BE ENERGIZED AND THE OUTSIDE AIR DAMPER SHALL OPEN 100% WHEN EXHAUST FAN KEF-1 AND KEF-2 ARE ENERGIZED.
2. MAKE-UP UNIT SUPPLY AIR FAN SHALL BE DE-ENERGIZED BY ANY KITCHEN EXHAUST HOOD FIRE EXTINGUISHING SYSTEM, SMOKE DETECTOR ALARMS, OR UPON ALARM FROM DUCT MOUNTED SMOKE DETECTOR OF MAU-1.
3. EVAPORATIVE COOLING OR GAS HEAT (IF EQUIPPED) SHALL ENABLE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE BETWEEN 75 DEG-F (ADJ.) AND 60 DEG-F (ADJ.).

ESP-1

1. ESP-1 SHALL BE ENERGIZED BY CONTACTORS IN HOOD CONTROL PANEL. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR.
2. ESP-1 FIRE SYSTEM WILL ACTIVATE WHEN THE HOOD SYSTEM ACTIVATES AND WILL ACT IN REVERSE.

RESTROOM EXHAUST FAN (EF-1)

1. EF-1 SHALL OPERATE CONTINUOUSLY DURING OCCUPIED HOURS AND SHALL BE SHUT DOWN DURING UNOCCUPIED HOURS.

OUTSIDE AIR SUPPLY FAN (SF-1)

1. SF-1 SHALL OPERATE CONTINUSOLY DURING OCCUPIED HOURS AND SHALL BE SHUT DOWN DURING UNOCCUPIED HOURS.

KITCHEN EXHAUST HOODS (KEH-1 AND KEH-2)

1. THE ELECTRICAL PACKAGE, TYPICALLY FP, IS DESIGNED TO THERMOSTATICALLY ACTIVATE THE EXHAUST FANS FOR AN EXHAUST HOOD WHENEVER ELEVATED TEMPERATURES ARE SENSED IN THE EXHAUST SYSTEM. THIS OPTION WILL MEET THE REQUIREMENTS OF BY PROVIDING A THERMOSTAT(S) MOUNTED IN THE DUCT OR HOOD RISER TO SENSE INCREASED EXHAUST TEMPERATURES.
2. CONTROLS SHALL BE LISTED BY ETL (UL 508A). THE CONTROL ENCLOSURE SHALL BE NEMA 1 RATED AND LISTED FOR INSTALLATION INSIDE OF THE EXHAUST HOOD UTILITY CABINET. THE CONTROL ENCLOSURE MAY BE CONSTRUCTED OF STAINLESS STEEL OR PAINTED STEEL.
3. TEMPERATURE PROBES(S) LOCATED IN THE DUCT RISER SHALL BE CONSTRUCTED OF STAINLESS STEEL.
4. A ROOM TEMPERATURE SENSOR IS ALSO PROVIDED FOR FIELD INSTALLATION IN THE KITCHEN SPACE IN ORDER TO START THE FAN(S) BASED ON THE TEMPERATURE DIFFERENTIAL BETWEEN THE ROOM AND THE EXHAUST AIR IN THE DUCT, RATHER THAN FIXED SET-POINTS. THE SYSTEM IS FACTORY PRE-SET TO ACTIVATE THE FANS AT 10 DEG-F ABOVE THE ROOM TEMPERATURE.
5. ONCE THE DUCT TEMPERATURE REACHES THE ACTIVATION POINT, THE EXHAUST FANS WILL BE ACTIVATED. THE CONTROLS ALSO PROVIDE HYSTERESIS TO PREVENT CYCLING OF THE FANS AFTER THE COOKING APPLIANCES HAVE BEEN TURNED OFF AND THE HEAT IN THE EXHAUST SYSTEM IS REDUCED. THE HYSTERESIS IS FACTORY SET 2 DEGREES AND WILL KEEP THE EXHAUST RUNNING UNTIL THE TEMPERATURE FALLS 2 DEGREES BELOW THE ACTIVATION SET POINT. A HYSTERESIS TIMER ALSO EXISTS TO KEEP THE FANS RUNNING FOR AT LEAST 30 MIN AFTER BEING ACTIVATED BY THE TEMPERATURE RISE.
6. THE ACTIVATION AND HYSTERESIS SETTINGS MAY BE FIELD ADJUSTED ON THE BOARD LCD INTERFACE LOCATED INSIDE THE CONTROL ENCLOSURE TO MEET APPLICATION NEEDS. THE PANEL IS FACTORY CONFIGURED TO SHUT DOWN SUPPLY FANS, TURN ON THE EXHAUST FANS AND TURN OFF THE HOOD LIGHTS IN A FIRE CONDITION.

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SHEET NAME:
MECHANICAL CONTROLS

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN: SK
SCALE: NTS

SHEET NO:
M602

POLLUTION CONTROL UNIT SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	AREA SERVED	ELECTROSTATIC PRECIPITATOR							ODOR CONTROL		FAN								WASH DOWN				ELECTRICAL				FIRE SYSTEM PIPING	WT. (LBS.)	REMARKS
					DOP EFFICIENCY (0.3 MICRONS)	UL LISTINGS	TOTAL QTY. OF ESP CELLS	AIR VOLUME (CFM)	ESP SECTIONS	SQ. FT. OF CELL FACE AREA	FPM VELOCITY	TRAYS	NOMINAL MEDIA (LBS.)	MANUFACTURER	MODEL	CFM	TSP	TYPE	DRIVE	RPM	HP	DETERGENT PER CYCLE (GAL.)	QUANTITY WASH DOWN CONNECTIONS	WATER REQUIRED @ 40 PSI	WATER REQ'D PER WASH CYCLE (GAL.)	V	PH	HZ	FLA			
ESP	1	CAPTIVEAIRE	SIF20DD	KITCHEN HOOD	97%	867 & 710	6	2,742	4	7.08	443	18	333	GREENHECK	QEI-15	2,742	1.25	CLASS II	BELT	1,754	5	0.6	2	15 GPM	54	208	3	60	14.5	ANSUL	2511	1, 2

NOTES:
1. SEE M801-M808 FOR ADDITIONAL REQUIREMENTS AND FIELD WIRING.
2. UNIT TO BE ELECTRONICALLY INTERLOCKED WITH MAU-1. SEE WIRING INTERLOCK DETAILS ON SHEETS M806, M807, AND M809.

INDOOR UNIT SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	TYPE	AREA SERVED	TONS	SUPPLY FAN			OSA (CFM)	COOLING CAPACITY					HEATING CAPACITY			REFRIGERANT AND PIPING			ELECTRICAL					FILTERS			WT. (LBS.)	REMARKS
							CFM	E.S.P. ("WG)	MOTOR		BTUH	EAT		LAT		BTUH	EAT	LAT	REFR.	RL	RG	MCA	MOCP	V	PH	HZ	QTY.	SIZE	%EFF.		
												DB (°F)	WB (°F)	DB (°F)	WB (°F)		DB (°F)	DB (°F)												
FC	1.1	CARRIER/TOSHIBA	MMD-AP0546BHPUL	CEILING CONCEALED DUCT	DINING AREA	4.5	1,177	0.6	DC MOTOR	400	54,000	80	67	56	64	60,000	70	80	R-410A	3/8"	5/8"	3.56	15	208	1	60	2	25" x 12" x 2"	MERV-13	124	1, 2
FC	1.2	CARRIER/TOSHIBA	MMD-AP0546BHPUL	CEILING CONCEALED DUCTED	DINING AREA	4.5	1,177	0.6	DC MOTOR	400	54,000	80	67	56	64	60,000	70	80	R-410A	3/8"	5/8"	3.56	15	208	1	60	2	25" x 12" x 2"	MERV-13	124	1, 2
FC	2.1	CARRIER/TOSHIBA	MMD-AP0366BHPUL	CEILING CONCEALED DUCTED	BACK OF HOUSE	3	1,130	0.6	DC MOTOR	100	36,000	80	67	56	64	40,000	70	80	R-410A	3/8"	5/8"	3.39	15	208	1	60	2	25" x 12" x 2"	MERV-13	124	1, 2
FC	2.2	CARRIER/TOSHIBA	MMD-AP0366BHPUL	CEILING CONCEALED DUCTED	BACK OF HOUSE	3	1,130	0.6	DC MOTOR	100	36,000	80	67	56	64	40,000	70	80	R-410A	3/8"	5/8"	3.39	15	208	1	60	2	25" x 12" x 2"	MERV-13	124	1, 2
FC	2.3	CARRIER/TOSHIBA	MMD-AP0366BHPUL	CEILING CONCEALED DUCTED	BACK OF HOUSE	3	1,130	0.6	DC MOTOR	100	36,000	80	67	56	64	40,000	70	80	R-410A	3/8"	5/8"	3.39	15	208	1	60	2	25" x 12" x 2"	MERV-13	124	1, 2
FC	3.1	CARRIER/TOSHIBA	40MAHBQ30XA3	HIGH WALL	UTILITY ROOM	2.5	646	-	DC MOTOR	-	30,000	80	67	56	64	-	-	-	R-410A	3/8"	5/8"	POWERED BY OUTDOOR UNIT		208	1	60	-	-	-	43	3, 4, 5

NOTES:
1. PROVIDE WITH REMOTE CONTROLLER (RBC-AMS54E-UL).
2. PROVIDE MERV 13 FILTER CABINET KIT (FS-APBHP03).
3. PROVIDE WITH REMOTE CONTROLLER (KSACN0801AAA).
4. FAN COIL TO RUN 24/7.
5. PROVIDE WITH CONDENSATE PUMP (63DS-900---118).

OUTDOOR CONDENSING UNIT SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	TYPE	MODULES (QUANT.)	TONS	COOLING CAPACITY		HEATING CAPACITY		REFRIGERANT AND PIPING			EER	COP	ELECTRICAL					WT. (LBS.)	REFRIGERANT CHARGE (LBS.)	COMPRESSOR HORSEPOWER (HP)	REMARKS
							BTUH	AMBIENT DB (°F)	BTUH	AMBIENT WB (°F)	REFR.	RL	RG			MCA	MOP	V	PH	HZ				
CU	1	CARRIER/TOSHIBA	MMY-MAP1206HT9P-UL	VRV HEAT PUMP	1	10-TONS	120,000	95	135,000	37.8	R-410A	1/2"	1 1/8"	12.5	4.0	38.1	50	208	3	60	684	38.9	5.36	1
CU	2	CARRIER/TOSHIBA	MMY-MAP1206HT9P-UL	VRV HEAT PUMP	1	10-TONS	120,000	95	135,000	37.8	R-410A	1/2"	1 1/8"	12.5	4.0	38.1	50	208	3	60	684	42.2	5.36	1
CU	3	CARRIER/TOSHIBA	38MAQB30R--3	HEAT PUMP	1	2.5-TONS	30,000	95	-	-	R-410A	3/8"	5/8"	11.5	-	20	30	208	3	60	140	6.06	2.95	

NOTES:
1. PROVIDE WITH SHRMe/SMMSe VRF OUTDOOR UNIT SNOW HOOD TO PROVIDE PROPER VENTILATION FROM AIR OUTSIDE PARKING GARAGE.

EXHAUST FAN SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	AREA SERVED	FAN						ELECTRICAL				WT. (LBS.)	REMARKS
					CFM	ESP	TYPE	DRIVE	RPM	WATTS	V	PH	HZ	FLA		
EF	1	GREENHECK	CSP-390-VG	RESTROOM	300	0.25	INLINE	DIRECT	1154	52	115	1	60	1.5	40	1, 2, 3, 4, 5

NOTES:
1. PROVIDE WITH VARI-GREEEN ECM WITH DIAL ONLY.
2. PROVIDE WITH NEMA-1 TOGGLE SWITCH.
3. PROVIDE WITH BACKDRAFT DAMPER.
4. EXHAUST FAN TO BE ELECTRICALLY INTERLOCKED WITH RESTROOM LIGHTS. SEE KEYNOTE 4/E301 FOR ADDITIONAL INFORMATION.
5. EXHAUST FAN TO BE ELECTRICALLY INTERLOCKED WITH FC-1.2.

SUPPLY FAN SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	SERVED	FAN						ELECTRICAL			WT. (LBS.)	REMARKS
					CFM	ESP	TYPE	DRIVE	RPM	HP	V	PH	HZ		
SF	1	GREENHECK	SQ-100-VG	OUTSIDE AIR	1100	0.25	INLINE	DIRECT	1458	1/4	115	1	60	48	1, 2, 3

NOTES:
1. PROVIDE WITH VARI-GREEN ECM WITH DIAL ONLY.
2. PROVIDE WITH NEMA-1 TOGGLE SWITCH.
3. PROVIDE WITH BACKDRAFT DAMPER.

MAKEUP AIR UNIT SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	AREA SERVED	CFM	E.S.P. (IN. WG.)	SUPPLY FAN			COOLING				HEATING				ELECTRICAL					FILTER EFF. (%)	WT. (LBS)	REMARKS
							FAN RPM	FAN BHP	HP	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	INPUT (MBH)	OUTPUT (MBH)	TEMP RISE (DEG-F)	EFF.	V	PH	FLA	MCA	MOCP			
MAU	1	CAPTIVEAIRE	A2-D.250-20D	KITCHEN	2,508	0.50	1231	1.0060	1.5	93	78.0	72.2	72.2	121.2	111.5	39	92%	208	3	4.4	6.7	15	MERV-13	948	1, 2, 3, 4, 5, 6, 7

NOTES:
1. PROVIDE WITH CASLINK BUILDING MONITORING SYSTEM FOR FUTURE CONNECTION.
2. PROVIDE WITH INLET AND MANIFOLD PRESSURE GAUGES.
3. PROVIDE WITH MOTORIZE BACKDRAFT DAMPER.
4. PROVIDE WITH FAN VFD.
5. PROVIDE WITH CURB VIBRATION ISOLATION. COORDINATE CURB REQUIREMENTS WITH MANUFACTURER.
6. SEE M806 FOR FIELD WIRING.
7. UNIT TO BE ELECTRONICALLY INTERLOCKED WITH MAU-1. SEE WIRING INTERLOCK DETAILS ON SHEETS M806, M807, AND M809.

KITCHEN EXHAUST HOOD SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	LENGTH X WIDTH	EXHAUST COLLAR				MAKE-UP COLLAR				AC COLLAR			HOOD CONSTRUCTION	FIRE SYSTEM	FIRE SYSTEM PIPING	WT. (LBS)	REMARKS
					CFM	LENGTH	WIDTH	ESP	CFM	LENGTH	WIDTH	ESP	CFM	DIAMETER	ESP					
KEH	1	CAPTIVEAIRE	5430 ND-2-ACPSP-F	9'-6" X 76"	1371	13"	10"	-0.515	1275	28"	10"	0.16	400	8"	0.03	430 SS	ANSUL R102	YES	916	1, 2
KEH	2	CAPTIVEAIRE	5430 ND-2-ACPSP-F	7'-11" X 76"	1371	13"	10"	-0.515	919	28"	10"	0.16	400	8"	0.03	430 SS	ANSUL R102	YES	687	1, 2

NOTES:
1. PROVIDE WITH UL APPROVED MANUAL AIR VOLUME DAMPER ON EXHAUST COLLAR BY HOOD MANUFACTURER.
2. SEE M801-M805 FOR ADDITIONAL REQUIREMENTS AND FIELD WIRING.

AIR CURTAIN SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	AREA SERVED	CFM	VELOCITY	HP	ELECTRICAL				WT. (LBS)	REMARKS
								V	PH	FLA	MOCP		
AC	1	MARS	LPV236-OB	DELIVERY DOOR	900	1800	1/6	120	1	2.4	-	32	1, 2
AC	2	READY ACCESS	DTU03-1018EA ELECTRIC HEATED	TAKE OUT WINDOW	135	1047	1/12	120	1	15.7	20	12	1, 3

NOTES:
1. PROVIDE WITH WALL MOUNTING BRACKET.
2. AIR CURTAIN TO BE CONTROLLED BY DOOR SWITCH.
3. PROVIDE WITH RELAY SWITCH KIT TO OPERATE UNIT WHEN WINDOW OPENS.

REFRIGERANT VOLUME CALCULATION - 3RD FLOOR PARKING

SPACE	SYSTEM	AREA (SQ. FT)	CEILING HEIGHT (FT)	VOLUME (FT³)	REFRIGERANT ALLOWED IN SPACE (LBS)/ (NOTE 1)	SYSTEM VOLUME (LBS) (NOTE 3)
3RD FLOOR PARKING	CU-1/CU-2/CU-3	6,800	8.2	55760	1449.76	87.16

NOTES:
1. PER CALIFORNIA MECHANICAL CODE; TABLE 1102.2. REFRIGERANT TYPE 4-10A. ALLOWABLE 26LBS/1000 (FT³)
2. REFRIGERATION MACHINERY ROOM NOT REQUIRED PER EXCEPTION CMC 1106.1.1.
3. SUM OF ALL SYSTEM VOLUME OF CU-1, CU-2, AND CU-3.

AIR DISTRIBUTION SCHEDULE

MARK NO.	MANUFACTURE MODEL NUMBER	NECK SIZE (IN)	CFM RANGE	MAX NC LEVEL	REMARKS
CD-1	PRICE PDS	6"	60-100	30	NOTE 1,2,3
	PRICE PDS	8"	101-200	30	NOTE 1,2,3
	PRICE PDS	10"	201-375	30	NOTE 1,2,3
	PRICE PDS	12"	376-500	30	NOTE 1,2,3
	PRICE PDS	14"	501-750	30	NOTE 1,2,3
CR-1	PRICE PDR	6"	60-100	30	NOTE 1,2,3
	PRICE PDR	8"	101-200	30	NOTE 1,2,3
	PRICE PDR	10"	201-375	30	NOTE 1,2,3
	PRICE PDR	12"	376-500	30	NOTE 1,2,3
	PRICE PDR	22"x22"	1,400	30	NOTE 1,2,3
RD-1	PRICE RCD	10"	301-500	30	NOTE 1
RG-1	PRICE 530	24"x14"	SEE PLAN	30	NOTE 1
EG-1	PRICE 530	8"x8"	SEE PLAN	30	NOTE 1
DG-1	PRICE STG SERIES	16"x6"	0-200	30	NOTE 1

NOTES:
1. FURNISH WITH OFF-WHITE BAKED ENAMEL FINISH UON. COORDINATE EXACT FINISHES WITH ARCH.
2. PROVIDE OPTIONAL INSULATION ON SUPPLY DIFFUSERS. OMIT INSULATION ON RETURN DIFFUSERS.
3. PROVIDE LAY IN TYPE 24x24 BORDER, OTHERWISE COORDINATE BORDER TYPE WITH ARCH. PRIOR TO ORDERING.

LOUVER SCHEDULE

ITEM	ITEM NO.	MANUFACTURER	MODEL	NECK SIZE (L" x W")	REMARKS
LV	1	RUSKIN	L6375D	45x30	1, 2, 3
LV	2	RUSKIN	CBDB2	45x30	1, 2, 3

NOTES:
1. PROVIDE 1/2" MESH ALUMINUM BIRDSCREEN.
2. LOUVER COLOR SHALL MATCH WALL, COORDINATE WITH ARCHITECT.
3. PROVIDE WITH LOW-LEAKAGE BACKDRAFT DAMPER.

OUTSIDE AIR SCHEDULE

UNIT	AREA SERVED	AREA	NUMBER OF PEOPLE	OSA BY AREA	OSA BY PEOPLE	MINIMUM OSA REQUIRED	OSA PROVIDED
FC-1.1	DINING AREA	370	16	55.5	240	240	400
FC-1.2	DINING AREA	940	26	141	390	390	400
FC-2.1	BACK OF HOUSE	380	4	57	60	60	100
FC-2.2	BACK OF HOUSE	215	4	32.25	60	60	100
FC-2.3	BACK OF HOUSE	300	4	45	60	60	100
FC-3.1	UTILITY ROOM	N/A	0	N/A	N/A	N/A	N/A

DUCT SIZING CHART

AIRFLOW (CFM)	SIZE (IN)
190 to 299	10X6 OR 8"
300 TO 429	14X6 OR 10"
430 TO 599	16X8 OR 12"
600 TO 799	20X8 OR 14"
800 TO 999	24X10, 14x16, OR 16"
1000 TO 1199	30X10, 14x22, OR 18"
1200 TO 1450	30X12 OR 20"
1451 TO 5000	34X24 OR 30"

FOR COMMERCIAL KITCHEN EXHAUST DUCT.
AIR VELOCITY SHALL NOT BE LESS THAN 500 FPM AND NOT EXCEED 2500 FPM.

DUCT SIZING CHART

AIRFLOW (CFM)	SIZE (IN)
210	10X6 OR 8"
215 TO 380	14X6 OR 10"
381 TO 610	16X8 OR 12"
610 TO 910	20X8 OR 14"
911 TO 1300	24X10, 14x16, OR 16"
1301 TO 1790	30X10, 14x22, OR 18"
1791 TO 2000	30X12 OR 20"
2001 TO 4400	34X24 OR 30"

FOR LOW VELOCITY SUPPLY AND RETURN DUCT.

REFRIGERANT VOLUME CALCULATION - RESTAURANT

ROOMS	SYSTEM	AREA (SQ. FT)	CEILING HEIGHT (FT)	VOLUME (FT³)	REFRIGERANT ALLOWED IN SPACE (LBS) (NOTE 1)	SYSTEM VOLUME (LBS)
DINING 101/ HALLWAY 106	CU-1	925*	16	14800	384.8	38.9
WOMEN'S RESTROOM 108 (NOTE 3)	CU-1	160	9	10008 (NOTE 5)	260.2	38.9
MEN'S RESTROOM 107 (NOTE 3)	CU-1	140	8	8520 (NOTE 5)	222.0	38.9
OPEN KITCHEN 102/ BACK KITCHEN 103	CU-2	875	10	8750	227.5	42.2
MANAGER'S OFFICE 105 (NOTE 2)	CU-2	65	10	6650 (NOTE 4)	172.9	42.2
CUSTARD MACHINE 104 (NOTE 2)	CU-2	60	10	6600 (NOTE 4)	171.6	42.2
MECHANICAL ROOM 110	CU-3	85	16	1360	35.36	6.06

NOTES:
1. PER CALIFORNIA MECHANICAL CODE; TABLE 1102.2. REFRIGERANT TYPE 4-10A. ALLOWABLE 26LBS/1000 (FT³)
2. PER CALIFORNIA MECHANICAL CODE SECTION 1104.2.3.2 - PLENUMS AND SECTION 1104.2.3.3 - SUPPLY AND RETURN DUCTS. THE SPACE ABOVE A SUSPENDED CEILING MAY BE INCLUDED IN CALCULATING THE REFRIGERANT QUANTITY LIMIT IN THE SYSTEM WHEN SUCH SPACE IS A PART OF THE AIR SUPPLY OR RETURN SYSTEM. [ASHRAE 15:7.3.2.3]. ROOMS UTILIZE PLENUM RETURN BACK TO UNIT. PLENUM VOLUME OF OPEN KITCHEN IS INCLUDED.
3. PER CALIFORNIA MECHANICAL CODE SECTION 1104.2.2; SPACES CONNECTED PER PERMANENT OPENING OR HVAC DUCT ARE COUNTED TOGETHER FOR SPACE VOLUME. TRANSFER GRILLE ADDED TO CONNECT ROOM WITH DINING 101/HALLWAY 106.
4. INCLUDES VOLUME OF OPEN PLENUM - 6000 (FT³). VOLUME OF PLENUM IS CALCULATED BY ADDING AREA WITH PLENUM. OPEN KITCHEN (875 SQFT) + MANAGERS OFFICE (65 SQFT) + CUSTARD ROOM (60 SQFT) = 1000 SQFT. MULTIPLIED BY HEIGHT OF PLENUM - 6
5. INCLUDES VOLUME OF OPEN DINING AREA.

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REVISION

△	DATE	DESCRIPTION
B	02/18/22	REVISION B
C	03/11/22	REVISION C
D	04/04/22	REVISION D
1	07/01/22	REVISION 1
3	08/08/22	REVISION 3
4	09/16/22	REVISION 4

STATUS: PERMIT/BID SET

PRELIMINARY:
Preliminary Documents Are for Design Review only and not intended for bidding, negotiating, permitting or construction purposes. They were prepared by or under the supervision of Zebra Projects, INC.

REGISTERED PROFESSIONAL ENGINEER OTHON ESTRADA JR. M36244 MECHANICAL STATE OF CALIFORNIA

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

SHEET NAME: MECHANICAL SCHEDULES

DATE: 11/08/21 | PROJECT NO: SHK-21-008

DRAWN: SK | SCALE: NTS

SHEET NO: M701

EQUIPMENT UTILITY SCHEDULE

REV	ITEM NO.	QTY	ITEM DESCRIPTION	MFR	MODEL	ELECTRICAL VOLTS	PH	AMPS	KW	HP	CONN.	NEMA	PLUMBING CW (IN)	HW (IN)	IW	DW	GAS SIZE	MBTU	REMARKS	ITEM NO.
	1	1	WALKIN COOLER/FREEZER COMBO	BALLY FOR SHAKE SHACK	CUSTOM C/F	120	1	15.0			JBH								WALK-IN COOLER - O.A. SIZE 9'-2-1/4" X 7'-9". WITH FLOOR AND INTERIOR RAMP, WITH 36" RIGHT HINGED COOLER DOOR STUCCO GALVALUME INTERIOR/EXTERIOR.	1
	1A	1	COOLER EVAPORATOR	BALLY FOR SHAKE SHACK	COOLER EVAPORATOR	115	1	15.0			JBH				3/4"				REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	1A
	1B	1	COOLER CONDENSING UNIT	BALLY FOR SHAKE SHACK	COOLER CONDENSING UNIT	208	3	20.0			JBH								OUTDOOR UNIT AIR-COOLED WITH WINTER CONTROLS, STAND AND ALL WEATHER HOOD	1B
	1C	1	FREEZER EVAPORATOR	BALLY FOR SHAKE SHACK	FREEZER EVAPORATOR	208	1	15.0			JBH				3/4"				REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	1C
	1D	1	FREEZER CONDENSING UNIT	BALLY FOR SHAKE SHACK	FREEZER CONDENSING UNIT	208	1	20.0			JBH								OUTDOOR UNIT AIR-COOLED WITH WINTER CONTROLS, STAND AND ALL WEATHER HOOD	1D
	2-7	1	SPARE NUMBER	CUSTOM																2-7
	8B	2	SHELVING UNIT, PLASTIC WITH POLY EXTERIOR STEEL POSTS	CAMBRO	CPU244872V4480														4-TIER SHELVING UNITS, WITH 7-1/2" H DUNNAGE SUPPORT	8B
	8C	1	SHELVING UNIT, PLASTIC WITH POLY EXTERIOR STEEL POSTS	CAMBRO	CPU245472V4480														4-TIER SHELVING UNITS, WITH 7-1/2" H DUNNAGE SUPPORT	8C
	9	4	UNIVERSAL PAN RACK	EAGLE GROUP	Z6690															9
	10	4	KEG DOLLIES	NIC	BY OTHERS															10
	11D	1	DUNNAGE RACK	CHANNEL	ADE2048															11D
	11E	1	DUNNAGE RACK	CHANNEL	ADE2060															11E
	12A	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														4-TIER UNIT WITH 74" POST; SIZES PER PLAN	12A
	10-18	1	SPARE NUMBER	CUSTOM																10-18
	19	1	LINEN BIN	NIC	BY OTHERS														NOT IN CONTRACT - BY OTHERS	19
	20	3	BREAD RACK DOLLY	NIC	BY OTHERS														NOT IN CONTRACT - BY OTHERS	20
	21	1	SPARE NUMBER	CUSTOM																21
	21C	1	SHELVING UNIT EPOXY	EAGLE FOR SHAKE SHACK	18_42_86_E														4-TIER UNITS WITH 86" POST; SIZES PER PLAN	21C
	21I	1	SHELVING UNIT EPOXY	EAGLE FOR SHAKE SHACK	24_36_86_E														4-TIER UNITS WITH 86" POST; SIZES PER PLAN	21I
	21J	1	SHELVING UNIT EPOXY	EAGLE FOR SHAKE SHACK	24_42_86_E														4-TIER UNITS WITH 86" POST; SIZES PER PLAN	21J
	22	1	SECURITY SHELVING UNIT	EAGLE FOR SHAKE SHACK	SECURITY SHELVING UNIT														CONSISTING OF: (4) 2448E SHELVES, (4) P74-E POSTS AND (2) SECM2448E SECURITY UNIT.	22
	23	1	MOBIL GARMENT RACK	EAGLE FOR SHAKE SHACK	MOBIL GARMENT RACK														CONSISTS OF (3) 1836VG-X WIRE SHELVES, (4) P86-VG-CO POSTS, (1) CH36 HANGER RAIL., (4) CASTERS	23
	24	1	LOCKERS	GLOBAL IND EQUIP	WB493332BK														G.C. TO PROVIDE WALL BLOCKING.	24
	25	1	EMPLOYEE TABLE	NIC	BY OTHERS															25
	25-28	1	SPARE NUMBER	CUSTOM																25-28
	29	1	NITROGEN TANK	NIC	BY OTHERS	115	1	20.0			DR	5-20P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	29
	30	2	RTI OIL TANK	NIC	BY OTHERS	110	1	20.0			JBW								ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	30
	31	2	CO2 TANK	NIC	BY OTHERS														ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	31
	32	2	WATER HEATER	NIC	BY OTHERS														ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	32
	33	1	BAG N BOX	NIC	BY OTHERS	120	1	20.0			DR	5-20P	1/2"						ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	33
	34	1	WATER FILTRATION SYSTEM	EVERPURE	EV932806								3/4"						G.C. TO PROVIDE WALL BLOCKING. P.C. TO INTERPIPE TO ICE MAKER/COFFEE MAKER; GC TO PROVIDE WALL BLOCKING	34
	35	1	SPARE NUMBER	CUSTOM																35
	36	1	ICE CUBER	MANITOWOC	IYT1200A	208-230	1	14.2			JBW		3/8"		1/2"					36
	36A	1	ICE BIN FOR ICE MACHINES	MANITOWOC	D570										3/4"					36A
	37-38	1	SPARE NUMBER	CUSTOM																37-38
	39	1	FLOOR TROUGH	NIC	BY OTHERS											4"			ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	39
	40	1	MOP SINK	NIC	EAGLE F2820-12											2"			ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	40
	40A	1	SERVICE FAUCET	T&S BRASS	B-0658								1/2"	1/2"					G.C. TO PROVIDE WALL BLOCKING.	40A
	41	1	SPARE NUMBER	CUSTOM																41
	42	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	WALL SHELVING UNIT 30_14														2-TIER UNIT 30"X14" WITH 33" POST AND WALL BRACKETS; SIZES PER PLAN. G.C. TO PROVIDE WALL BLOCKING.	42
	43-45	1	SPARE NUMBER	CUSTOM																43-45
	45A	4	HAND SINK	EAGLE GROUP	HSA-10-F-LRS								1/2"	1/2"		1-1/2"			G.C. TO PROVIDE WALL BLOCKING. (SHAKE SHACK TO PROVIDE WALL MOUNTED SOAP AND TOWEL DISPENSERS)	45A
	46	1	SPARE NUMBER	CUSTOM																46
	47-59	1	SPARE NUMBER	CUSTOM																47-59
	60	1	THREE (3) COMPARTMENT SINK	EAGLE GROUP	314-22-3-24										(3)2"					60
	60A	1	WALL / SPLASH MOUNT FAUCET	T&S BRASS	B-0231-CC								1/2"	1/2"						60A
	60B	1	MINI PRE-RINSE FAUCET ASSEMBLY	T&S BRASS	MPZ-8WLN-08														WITH ADD ON FAUCET AND WALL BRACKET; G.C. TO PROVIDE WALL BLOCKING.	60B
	60C	3	DRAIN, LEVER / TWIST WASTE	FISHER	22209														NOT SHOWN ON PLAN.	60C
	60D	1	FAUCET, PARTS	T&S BRASS	B-TEE-EZK														NOT SHOWN ON PLAN. PLUMBER TO INSTALL THIS UNIT ON 60A FAUCET	60D
	61-62	1	SPARE NUMBER	CUSTOM																61-62
	63	1	DISHWASHER, UNDERCOUNTER	ECOLAB	E-UHT	208	3	21.3		1	JBW			3/4"	1"				WITH BUILT IN HOT WATER BOOSTER.	63
	64	1	WALL GRID SYSTEM	EAGLE FOR SHAKE SHACK	YSHAKE-GRID-0002-00														(1) 2-TIER UNIT, (1) 1-TIER UNIT WITH WALL MAT, 33" POST AND WALL BRACKETS; SIZES PER PLAN. G.C. TO PROVIDE WALL BLOCKING.	64
	65-69	1	SPARE NUMBER	CUSTOM																65-69
	70	1	PREP TABLE	EAGLE GROUP	T3096STEM-BS										1-1/2"				WITH (1) E24 18" X 20" SINK BOWL, (1) FISHER 22209 LEVER WASTE, FAUCET AND SINK COVER.	70
	70A	1	DECK MOUNT FAUCET	T&S BRASS	B-0227								1/2"	1/2"						70A
	70B	1	FAUCET, PARTS	T&S BRASS	B-TEE-EZK														NOT SHOWN ON THE PLAN.	70B
	70C	1	DRAIN, LEVER / TWIST WASTE	FISHER	22209														NOT SHOWN ON PLAN.	70C
	71-72	1	SPARE NUMBER	CUSTOM																71-72
	73	1	FRUIT / VEGETABLE TURNING SLICER	NEMCO	55200AN-4															73
	74	1	VEGETABLE DRYER	DYNAMIC USA	SD92SC														WITH SSB-1 STABILIZING BASE.	74
	75	1	MIXER, HAND	ROBOT COUPE	MP 350TURBOCOMBI	120	1	5.5	0.66	1	DR	5-15P							WITH STORAGE BRACKET. G.C. TO PROVIDE WALL BLOCKING.	75
	76	1	SPARE NUMBER	CUSTOM																76
	77	1	RETHERMALIZER, WATER TANK, ELECTRIC	PITCO FOR SHAKE SHACK	TH-CRTE	208	1	29.8	6.0		SP	L6-30P			3/8"					77
	78	1	FOOD PROCESSOR	WARING	WFP11SW	120	1	6.0		3/4	DR	5-15P								78
	79	1	SPARE NUMBER	CUSTOM																79
	80	1	WALL GRID SYSTEM	EAGLE FOR SHAKE SHACK	YSHAKE-GRID-0001-00														(1) 2-TIER UNIT, (1) 1-TIER UNIT WITH WALL MAT, 33" POST AND WALL BRACKETS; SIZES PER PLAN. G.C. TO PROVIDE WALL BLOCKING.	80
	81	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														2-TIER UNIT WITH 33" POST; SIZES PER PLAN	81
	82-89	1	SPARE NUMBER	CUSTOM																82-89
	90	1	EXHAUST HOOD	NIC	BY OTHERS	X	X	X			JBH								* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER. REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS.	90
	91	1	EXHAUST FAN	NIC	BY OTHERS	X	X	X			X								* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER. REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS.	91
	92	1	SUPPLY FAN	NIC	BY OTHERS	X	X	X			X								* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER. REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS.	92
	93	1	GREASE COLLECTOR	NIC	BY OTHERS	120	1	20.0			DR	5-20P							* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER.	93
	94	1	ANSUL	NIC	BY OTHERS	120	1	15.0			JBH								E.C. TO INTERWIRE TO BUILDING ALARM SYSTEM AND FOR EQUIPMENT SHUT-DOWN. ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER.	94
	95-99	1	SPARE NUMBER	CUSTOM																95-99
	100	1	GAS COUNTERTOP GRIDDLE	LANG	9K-236SC-NATSH	120	1	2.0			DR	5-15P					3/4"	81.0		100
	100A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	1675KIT2S48														NOT SHOWN ON PLAN.	100A
	101	1	GAS COUNTERTOP GRIDDLE	LANG	224SC	120	1	2.0			DR	5-15P					3/4"	54.0		101
	101A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	1675KIT2S48														NOT SHOWN ON PLAN.	101A
	102	1	SPARE NUMBER	CUSTOM																102
	102A	1	EQUIPMENT STAND, REFRIGERATED BASE	RANDELL FOR SHAKE SHACK	20063-513-SS-R	115	1	8.7		1/4	DR	5-15P							ON CASTERS, RIGHT SIDE COMPRESSOR.	102A
	102E	1	EQUIPMENT STAND, REFRIGERATED BASE	RANDELL FOR SHAKE SHACK	20048-513-30HSS-R	115	1	8.7		1/4	DR	5-15P							ON CASTERS, RIGHT SIDE COMPRESSOR.	102E
	103	1	FRYER BATTERY, GAS	PITCO	SSH55-2FD	115	1	1.7			DR	5-15P					1"	160.0	WITH FILTER DRAWER, DIGITAL CONTROLS, CASTERS, DOUBLE BASKET HANGERS.	103
		1		PITCO FOR SHAKE SHACK		115	1	7.0		1/3	DR	5-15P								
	103A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	16100KIT2S48														NOT SHOWN ON PLAN.	103A

COORDINATION SET
10-12-2021

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Owner and all Contractors to check and verify existing dimensions and conditions in the field before starting construction and to notify TriMark of any material or detail changes.

STORE NO:
CA #1398

SHAKE SHACK
SHAKE SHACK - KOREATOWN
3780 WILSHIRE BLVD. LOS ANGELES, CA 90010

REVISIONS

NO.	BY	DATE	DESCRIPTION
	MSH	10-12-21	COORDINATION SET

Shake Shack - Koreatown

Los Angles, CA

Foodservice Equipment Drawings

REVISION

△	DATE	DESCRIPTION
	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS:
PERMIT/BID SET

PRELIMINARY:
Preliminary Documents Are for Design Review only and not intended for bidding, negotiating, permitting or construction purposes. They were prepared by or under the supervision of Zebra Projects, INC.

REGISTERED PROFESSIONAL ENGINEER
DYHONY ESTRADA JR.
M38244
MECHANICAL
STATE OF CALIFORNIA

FIELD VERIFICATION:
The contractor shall verify all figured dimensions and condition at the project site and notify Zebra Projects, INC. of any dimensional errors, or omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

PROJECT NUMBER: 21-204
DATE: 08-25-2021
SCALE: 1/4" = 1'-0"
DRAWN BY: MSH
APPROVED BY: SD

SHEET TITLE:
KITCHEN EQUIPMENT SCHEDULE

SHEET NUMBER:
K601

SHEET NAME:
KITCHEN EQUIPMENT LIST

DATE: 12/07/21
PROJECT NO: SHK-21-008
DRAWN: Author
SCALE:

SHEET NO:
M702

THIS DOCUMENT WAS ORIGINALLY PRINTED ON A 30" x 42" SIZE SHEET

EQUIPMENT UTILITY SCHEDULE

						ELECTRICAL							PLUMBING						
REV	ITEM NO.	QTY	ITEM DESCRIPTION	MFR	MODEL	VOLTS	PH	AMPS	KW	HP	CONN.	NEMA	CW (IN)	HW (IN)	IW	DW	GAS SIZE	MBTU	REMARKS	ITEM NO.
	104	1	FRYER BATTERY, GAS	PITCO	SSH55-1FD	115	1	1.7			DR	5-15P					3/4"	80.0	WITH FILTER DRAWER, DIGITAL CONTROLS, CASTERS, DOUBLE BASKET HANGERS.	104
		1	FILTER VOLTAGE	PITCO		115	1	6.1		1/3	DR	5-15P								
	104A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	16100KIT2S48														NOT SHOWN ON PLAN.	104A
	105	1	FRENCH FRY WARMER	HATCO	GRFHS-PT16	120	1	9.1	1.09		DR	5-15P								105
	106	1	SPEED RAIL / RACK	EAGLE GROUP	500778															106
	107	1	BREADING STATION	EAGLE FOR SHAKE SHACK	YCOUNTER-0520-00															107
	108-109	1	SPARE NUMBER	CUSTOM																108-109
	110	2	STANDOFF SHELF	EAGLE FOR SHAKE SHACK	YWS672-0001-00														ALL S/S 6" X 72".	110
	111	1	TIMER, ELECTRONIC	COOPER-ATKINS	TFS4-01														NOT SHOWN ON PLAN.	111
	112-119	1	SPARE NUMBER	CUSTOM																112-119
	120	1	BUN TOASTER TABLE	EAGLE GROUP	T3048STB-BS															120
	121	1	TOASTER, CONTACT GRILL, CONVEYOR TYPE	APW WYOTT	M-95-3	208	1	13.4	2.78		SP	6-20P								121
	122	1	PIZZA PREPARATION REFRIGERATOR	RANDELL	8383N-290	115	1	5.8		1/4	DR	5-15P								122
	123	1	WORKTOP FREEZER	RANDELL FOR SHAKE SHACK	9402F-290	115	1	2.2		1/4	DR	5-15P								123
	124	1	FOOD TOPPING WARMER, COUNTERTOP	SERVER PRODUCTS	81220	120	1	8.3	1.0		DR	5-15P							WITH (2)94009 S/S JARS.	124
	125	2	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	125
	126	2	BRACKET	CDW	1711461/SHACK														NOT SHOWN ON PLAN.	126
	127-129	1	SPARE NUMBER	CUSTOM																127-129
	130	1	OVERSHELF	EAGLE FOR SHAKE SHACK	OVERSHELF	120/208		20.0			JBW								ALL S/S SIZE AS PER PLANS	130
	130A	1	PAN HOLDER	EAGLE FOR SHAKE SHACK	YJ-3618-00															130A
	131	1	HEATED SHELF FOOD WARMER	HATCO	GRSB-60-F	120	1	7.9	0.95		JBH									131
	132	1	S/S SANDWICH DIVIDER	EAGLE FOR SHAKE SHACK	YJ-3488-00														S/S RODS SIZED TO FIT ON HEATED SHELF.	132
	133	1	HEAT LAMP	HATCO	GRAHL-60D3	120/208	1	16.6	3.1		JBH								WITH REMOTE BOX ENCLOSURE.	133
	134	1	HEAT LAMP	HATCO	UGAHL-24D3	120/208	1	8.2	1.62		JBH								UNIT WITH CLED-2700 LED LIGHT BULBS.	134
	135	1	HEATED SHELF FOOD WARMER	HATCO	GRSB-24-F	120	1	3.5	0.42		JBH									135
	140	1	WORK CENTER	EAGLE FOR SHAKE SHACK	YT1672-0002-00														CONSISTING OF: 16" X 72", S/S TOP, (2) WIRE SHELVES BELOW AND CASTERS.	140
	140A	1	WORK CENTER	EAGLE FOR SHAKE SHACK	YT1660-0002-00														CONSISTING OF: 16" X 60", S/S TOP, (2) WIRE SHELVES BELOW AND CASTERS.	140A
	141	1	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	141
	142	1	BRACKET	NIC															NOT SHOWN ON PLAN.	142
	143	1	CURVED LID DISPLAY FREEZER	EXCELLENCE IND	MB-2HCD	115	1	1		1/3	DR	5-15P								143
	144	1	SPARE NUMBER	CUSTOM																144
	145	2	FOOD TOPPING WARMER, COUNTERTOP	SERVER PRODUCTS	81195	120	1	4.3	0.517		DR	5-15P							WITH 94009 S/S JARS.	145
	146-159	1	SPARE NUMBER	CUSTOM																146-159
	160	1	FROZEN CUSTARD MACHINE	STOELTING	M202-209B00SIR	208-230	3	15.0		3	SP		1/2"		1-1/2"				REFRIGERATION INSTALLER TO PROVIDE QUICK DISCONNECT LINES.	160
	161	2	REMOTE CONDENSER UNIT	STOELTING	285091	208-230	3	15.0			JBH								REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS.	161
	162	1	FROZEN CUSTARD DIPPING CABINET	C NELSON	BS2SE-RB	115	1	15.0			DR	5-15P			1"					162
	163-169	1	SPARE NUMBER	CUSTOM																163-169
	170	1	SHAKE SLEEVE TABLE	EAGLE GROUP	CUSTOM														ALL WELDED CONSTRUCTION AND TOP CUTOUT FOR ITEM 171.	170
	171	2	DIPPER WELL	T&S BRASS	B-2282-01								1/2"		1-1/2"				WITH FAUCET.	171
	172	1	DIPPING CABINET	RANDELL FOR SHAKE SHACK	69345A-SS44	115	1	6.5		1/3	DR	5-15P								172
	173	1	SHELVING, WALL-MOUNTED	EAGLE FOR SHAKE SHACK	WS1548-16/4														G.C. TO PROVIDE WALL BLOCKING.	173
	173A	1	CONDIMENT SHELF	EAGLE FOR SHAKE SHACK	YRAIL-0026-00														G.C. TO PROVIDE WALL BLOCKING.	173A
	174	1	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	174
	175	1	BRACKET	CDW	1711461/SHACK														NOT SHOWN ON PLAN, G.C. TO PROVIDE WALL BLOCKING.	175
	176	1	BRACKET, POWER CONDITION	EAGLE GROUP	YJ-2990-00														NOT SHOWN ON PLAN, BRACKETS FOR ITEM# 174, G.C. TO PROVIDE WALL BLOCKING, NOT SHOWN ON PLAN.	176
	177	1	SHAKE TABLE W/ SINK	EAGLE FOR SHAKE SHACK	CUSTOM								1/2"	1/2"	2"				ALL S/S CONSTRUCTION L-SHAPED 11'-3" X 42" X 30" DEEP W/ 10" X 14" X 9.5" DEEP INTEGRAL SINK W/ FAUCET W/ BASKET DRAIN, MARINE EDGES,BACK & LEFT SIDE SPLASH.	177
	177A	1	FAUCET	ELKAY FOODSERVICE	LK-1110								1/2"						P.C. TO INTERPIPE THIS CONNECTION FROM WATER FILTER, MOUNTED TO ITEM#177.	177A
	178	1	WORK TABLE, STAINLESS STEEL TOP	EAGLE GROUP	CUSTOM															178
	178A	1	S/S UNDERCOUNTER WINE CABINET	EAGLE FOR SHAKE SHACK	FABRICATE														ALL S/S CONSTRUCTION 24" X 48" UNDERCOUNTER CABINET.	178A
	179-180	1	SPARE NUMBER	CUSTOM																179-180
	181	1	BEVERAGE DISPENSER, ELECTRIC (COLD)	GRINDMASTER-CECILWARE	C-1S-16	120	1	4.0	0.45		DR	5-15P							WITH CUP ACTIVATED HANDLE OPTION AND 11161M MILK IMPELLER.	181
	182	3	MIXER, DRINK / BAR	HAMILTON BEACH	HMD400	120	1		0.9	(3) 1/3	DR	5-15P							ONE (1) BACKUP MIXER NOT SHOWN ON PLAN.	182
	183	1	SPARE NUMBER	CUSTOM																183
	184	1	MIXER, DRINK / BAR	HAMILTON BEACH	HMD900	120	1	5.2		3/4	DR	5-15P								184
	185	1	SPARE NUMBER	CUSTOM																185
	186	1	CUP & LID ORGANIZER	SAN JAMAR	C8503WF															186
	187	1	WIRE SHELVING CHROME	EAGLE FOR SHAKE SHACK	SHELVING UNIT														5-TIER UNITS , 54" POST; SIZES PER PLAN	187
	188	1	DISHWASHER, UNDERCOUNTER	ECOLAB	E-UHT	208	3	21.3		1	JBW			3/4"	1"				WITH BUILT IN HOT WATER BOOSTER.	188
	189-199	1	SPARE NUMBER	CUSTOM																189-199
	200	1	UNDERCOUNTER REFRIGERATOR	RANDELL	9404-290	115	1	2.4		1/4	DR	5-15P							WITH 3" CASTERS. DOOR HINGED RIGHT.	200
	201-202	1	SPARE NUMBER	CUSTOM																201-202
	203	1	ICE CHEST & SODA TOWER	NIC	BY OTHERS	120	1	15.0			SR	5-20P			3/4"				ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	203
	204	1	TEA BREWER	NIC	BY OTHERS	120	1	14.4	1.7		SR	5-20P	1/4"						ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	204
	205	1	SPARE NUMBER	CUSTOM																205
	206	1	BEVERAGE DISPENSER, ELECTRIC (COLD)	GRINDMASTER-CECILWARE	E49-3	120	1	6.0	0.66	1/5	DR	5-15P							WITH 3709 LOW FOAM IMPELLER AND 2266 CUP ACTIVATED HANDLE	206
	207	1	CUP & LID ORGANIZER	SAN JAMAR	C8503WF															207
	208	1	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	208
	209	1	BRACKET	CDW	1711461/SHACK														NOT SHOWN ON PLAN, G.C. TO PROVIDE WALL BLOCKING.	209
	210	1	BRACKET, POWER CONDITION	EAGLE GROUP	YJ-2990-00														NOT SHOWN ON PLAN, BRACKETS FOR ITEM# 208, G.C. TO PROVIDE WALL BLOCKING, NOT SHOWN ON PLAN.	210
	211-219	1	SPARE NUMBER	CUSTOM																211-219
	220	1	FRONT COUNTER	EAGLE FOR SHAKE SHACK	FRONT COUNTER														S/S STEEL TOP	220
	221	2	P.O.S. TERMINALS	NIC	BY OTHERS	120	1	15.0			DR	5-20P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	221
	221A	4	KIOSK TERMINAL	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	221A
	222	1	BRACKET	CDW	851839														NOT SHOWN ON PLAN.	222
	223	1	3-FAUCET T-TOWER	CHILL-RITE	THT-3-S/S										3/4"				THREE FAUCET WITH DRIP PAN.	223
	224		DRAFT BEER SYSTEM POWER PACK	CHILL-RITE	MLN-33	120	1	12.0		1/3	SR	5-20P	1/2"							224
	223-226	1	SPARE NUMBER	CUSTOM																223-226
	226A	5	WIRE SHELVING CHROME	EAGLE FOR SHAKE SHACK	SHELVING UNIT														2-TIER UNITS WITH 33" POST; SIZES PER PLAN	226A
	227	1	SPARE NUMBER	CUSTOM																227
	228	2	SHELVING, WALL-MOUNTED	EAGLE FOR SHAKE SHACK	WS1548-16/4														G.C. TO PROVIDE WALL BLOCKING.	228
	228A		SHELVING, WALL-MOUNTED	EAGLE FOR SHAKE SHACK	WS1560-16/4														G.C. TO PROVIDE WALL BLOCKING.	228A
	229-230	1	SPARE NUMBER	CUSTOM																229-230
	231	6	5"X5"X6" CUSTOM PAN	EAGLE FOR SHAKE SHACK	YSHAKE-BIN-0002-00															231
	231A	3	5"X5"X3" CUSTOM PAN	GET	SSPAN-03															231A
	232	2	TEA DISPENSER	BUNN	39600.0001														NOT SHOWN ON THE PLAN.	232
	233-249	1	SPARE NUMBER	CUSTOM																233-249
	233	2	CONDIMENT DISPENSER	SERVER PRODUCTS	07125															233
	234	1	WATER DISPENSING ARM	CHILL-RITE	COLUM-1															234
	235	2	NAPKIN DISPENSER	NIC															NOT SHOWN ON PLAN.	235
	240	1	TRASH UNIT	EAGLE-ACS	YSHAKE-TRASH-0005-00															240
	241	1	WASTE RECEPTACLE	NIC	BY OTHERS															241
	242	3	WASTE RECEPTACLE	NIC	BY OTHERS															242
	250	1	WALL PANELS	EAGLE GROUP	WALL PANELS														NOT SHOWN ON PLAN, REFER TO ARCHITECTUAL PLAN FOR S/S LINEAR AMOUNT NEEDED, NOT SHOWN ON PLAN.	250
	251	1	CORNER GUARDS	EAGLE GROUP	CORNER GUARDS														NOT SHOWN ON PLAN, REFER TO ARCHITECTUAL PLAN FOR S/S LINEAR AMOUNT NEEDED, NOT SHOWN ON PLAN.	251
	252	1	WALL CAP	EAGLE GROUP	WALL CAP														NOT SHOWN ON PLAN, REFER TO ARCHITECTUAL PLAN FOR S/S LINEAR AMOUNT NEEDED, NOT SHOWN ON PLAN.	252

COORDINATION SET
10-12-2021

TriMark
Foodservice Equipment, Supplies and Design
UNITED EAST

505 Collins Street
P.O. Box 3505
South Attleboro, MA 02703
P 508-399-6000
F 508-761-3620

trimarkusa.com

REVISIONS

NO.	BY	DATE	DESCRIPTION
	MSH	10-12-21	COORDINATION SET

Shake Shack - Koreatown
Los Angles, CA
Foodservice Equipment Drawings

PROJECT NUMBER: 21-204
DATE: 08-25-2021
SCALE: 1/4" = 1'-0"
DRAWN BY: MSH
APPROVED BY: SD

SHEET TITLE: KITCHEN EQUIPMENT SCHEDULE

SHEET NUMBER: K602

THIS DOCUMENT WAS ORIGINALLY PRINTED ON A 30" x 42" SIZE SHEET

zebra
ZEBRA PROJECTS, INC.
14614 N KIERLAND BLVD. SUITE N 300
SCOTTSDALE, ARIZONA 85254
PHONE: 480.912.1169 www.zbr.co.uk

INFRASTRUCTURE FACTOR CONSULTING, INC.
2361 Rosecrans Ave. Suite 368, El Segundo, CA 90245
P: 310.725.1500 F: 310.725.0215 www.iFactor.com

STORE NO: CA #1398

SHAKE SHACK
SHAKE SHACK - KOREATOWN
3780 WILSHIRE BLVD. LOS ANGELES, CA 90010

REVISION

△	DATE	DESCRIPTION
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SHEET NAME: KITCHEN EQUIPMENT LIST

DATE: 12/07/21
PROJECT NO: SHK-21-008
DRAWN: Author
SCALE: 6" = 1'-0"

SHEET NO: M703

FOR QUESTIONS, CALL THE
Eastern PA Mechanical
REGION 108
PHONE: (267) 504-4126
EMAIL: reg108@captiveaire.com

HOOD INFORMATION – JOB#5505815

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	MUA CFM	AC CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1	Hood 1	5430 ND-2-ACPSP-F	CAPTIVEAIRE	7' 10"	600 DEG	I	HEAVY	175	1371	10"	13"	4"		1371	1519	-0.515"	1275	400	430 SS WHERE EXPOSED	LEFT	ALONE
2	Hood 2	5430 ND-2-ACPSP-F	CAPTIVEAIRE	7' 10"	600 DEG	I	HEAVY	175	1371	10"	13"	4"		1371	1519	-0.515"	919	400	430 SS WHERE EXPOSED	RIGHT	ALONE

HOOD INFORMATION

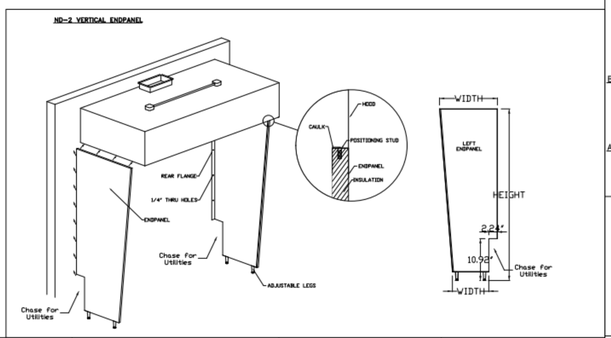
HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	UTILITY CABINET(S) LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1	Hood 1	CAPTRATE SOLO FILTER	5	20"	16"	85% SEE FILTER SPEC	3	RECESSED ROUND	NO	LEFT	20"x54"x30"	TANK FS	4.0/4.0/4.0			YES	1041 LBS
										WALL MNT	12"x36"x24"	PCU TANK	4.0/4.0				
2	Hood 2	CAPTRATE SOLO FILTER	5	20"	16"	85% SEE FILTER SPEC	3	RECESSED ROUND	NO							YES	554 LBS

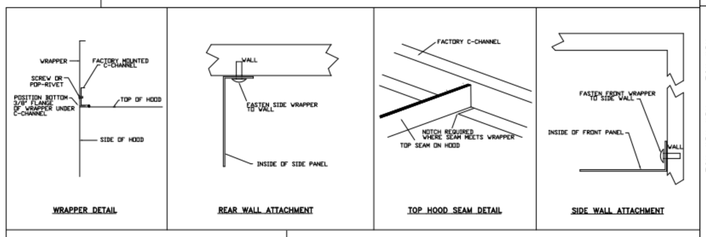
HOOD OPTIONS

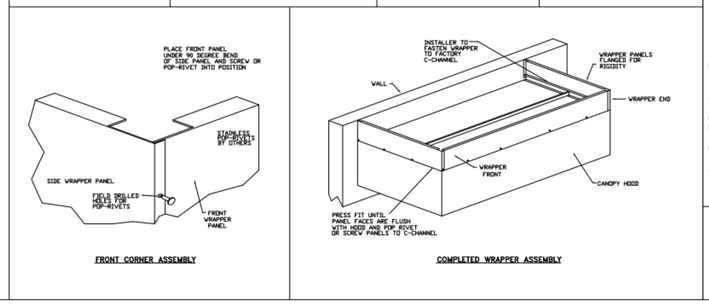
HOOD NO	TAG	OPTION
1	Hood 1	FIELD WRAPPER 18.00" HIGH FRONT, LEFT.
		BALANCE DAMPERS.
		RISER SENSOR INSTALL 6IN PLEN.
		LEFT WIDE VERTICAL END PANEL 42" TOP WIDTH, 36" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
2	Hood 2	FIELD WRAPPER 18.00" HIGH FRONT, RIGHT.
		RIGHT END STANDOFF (FINISHED) 1" WIDE 54" LONG INSULATED.
		BALANCE DAMPERS.
		RISER SENSOR INSTALL 6IN PLEN.
		RIGHT WALL AS END PANEL.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1	Hood 1	Front	114"	22"	6"	MUA	10"	28"		637	0.160"
						MUA	10"	28"		637	0.160"
						AC			8"	100	0.032"
						AC			8"	100	0.032"
						AC			8"	100	0.032"
						AC			8"	100	0.032"
2	Hood 2	Front	95"	22"	6"	MUA	10"	28"		459	0.101"
						MUA	10"	28"		459	0.101"
						AC			8"	100	0.032"
						AC			8"	100	0.032"
						AC			8"	100	0.032"
						AC			8"	100	0.032"







LISTINGS & CERTIFICATIONS

CAPTIVEAIRE HOODS BUILT IN COMPLIANCE WITH:

E3054804-001 & E3054804-002
STANDARD 710
BUILT IN ACCORDANCE WITH NFPA No. 96

Listed under ETL File number 3054804-001/002

CLEARANCE TO COMBUSTIBLES

CAPTIVEAIRE HOODS HAVE OPTIONAL CLEARANCE REDUCTION SYSTEMS AVAILABLE AS FOLLOWS:

MATERIAL	CLEARANCE REDUCTION SYSTEM
NON-COMBUSTIBLE	NONE REQUIRED
LIMITED-COMBUSTIBLE	3" UNINSULATED STANDOFF
COMBUSTIBLE	1" INSULATED STANDOFF

GENERAL NOTES

INSTALLATION

1. ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
2. ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
3. HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGER MATERIALS PROVIDED BY INSTALLING CONTRACTORS.
4. ALL CONNECTIONS FROM CAPTIVEAIRE HOOD PER MECHANICAL PLANS.
5. COOKING EQUIPMENT TO SHUT OFF IN EVENT OF FIRE.
6. EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
7. ALL LIGHT FIXTURES SHOWN INSTALLED BY CAPTIVEAIRE ARE FACTORY PREWIRED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES ARE BY ELECTRICAL CONTRACTOR.
8. LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
9. SEISMIC RESTRAINTS ARE RESPONSIBILITY OF INSTALLING CONTRACTOR.
10. INSTALLING CONTRACTORS ASSUME ALL RELATED REPONSIBILITY FOR VERIFICATION OF DIMENSIONAL DATA CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INTEGRATION, AND ADMINISTRATION OF CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT SHOWN.

BALANCE

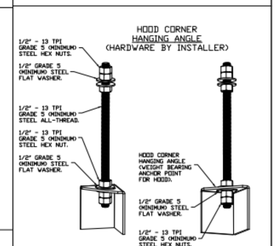
11. KITCHEN HOODS MUST BE BALANCED WITH KITCHEN.
12. KITCHEN SHALL BE NEGATIVE WITH RESPECT TO DINING AREA.
13. RESTAURANT SHALL BE POSITIVE WITH RESPECT TO AMBIENT PRESSURE.

ADDITIONAL

14. WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
15. SIGNED AND "APPROVED" COPIES OF THIS DOCUMENT MUST BE RECEIVED BY THE FACTORY PRIOR TO COMMENCEMENT OF FABRICATION.

HVAC DISTRIBUTION NOTE

IT IS RECOMMENDED NOT TO INSTALL HIGH VELOCITY DIFFUSERS OR HVAC RETURNS WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED, LOW-VELOCITY, NON-DIRECTIONAL DIFFUSERS ARE RECOMMENDED.



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

VERIFY CEILING HEIGHT

___' - ___"

HEIGHT REQUIRED TO VERIFY THAT HOOD FITS SPACE AND TO SIZE THE ENCLOSURE PANELS

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DATE: 6/9/2022
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SCALE:
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SHEET NO. 1

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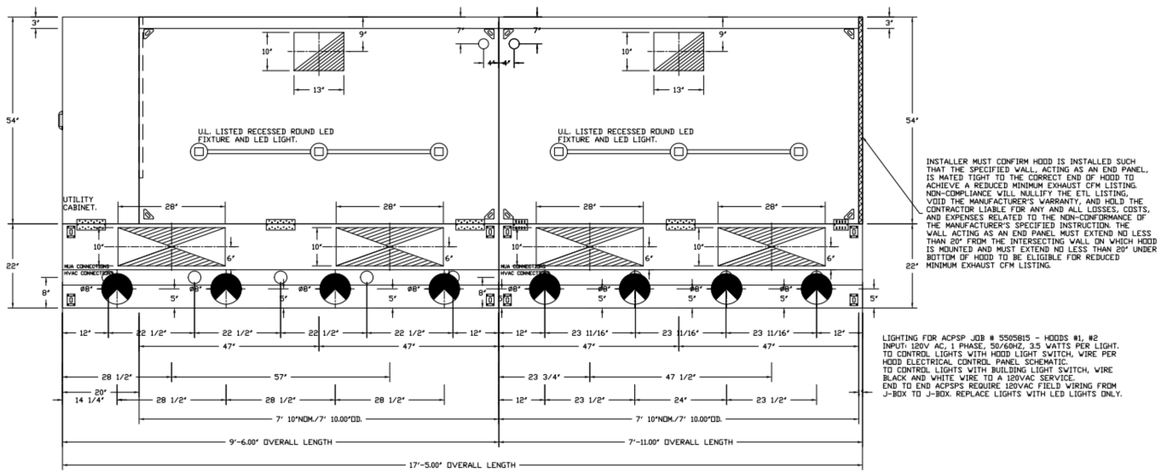
SHEET NAME: **CAPTIVEAIRE DRAWINGS**

DATE: 11/08/21 | PROJECT NO: SHK-21-008
DRAWN: | SCALE: NTS

SHEET NO: **M801**

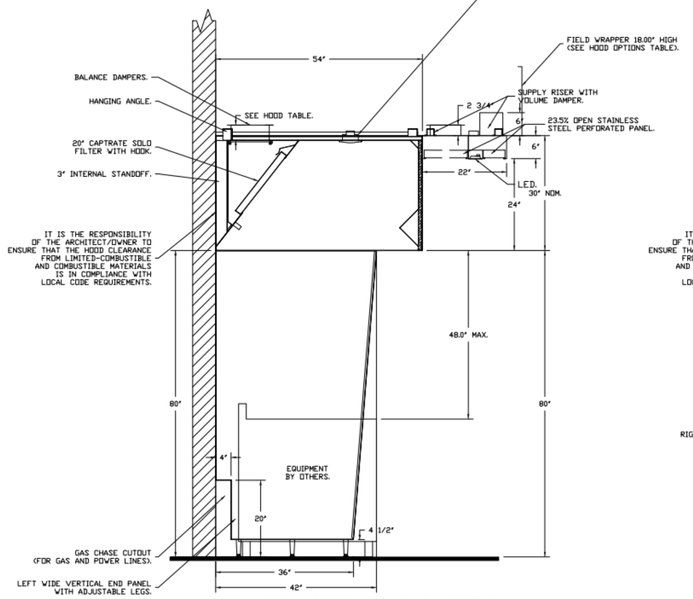


PLAN VIEW – HOOD #1 (Hood 1)
7' 10.00" LONG 5430ND-2-ACPSP-F

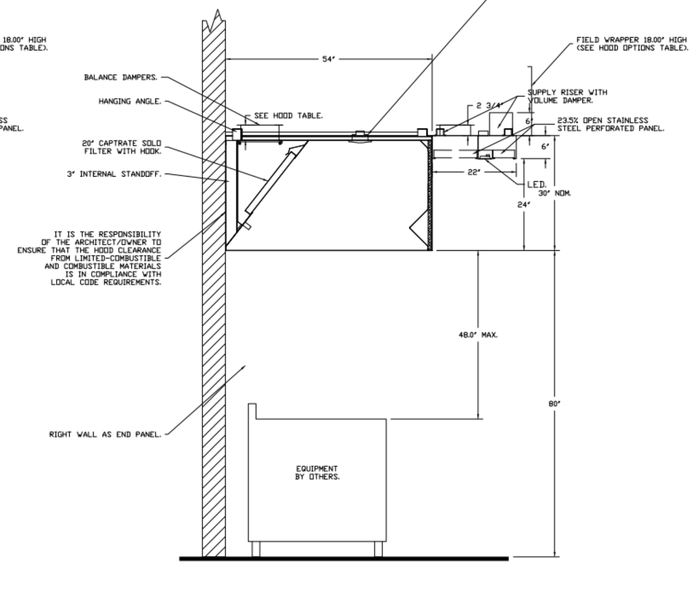
ACPSP SHIPS LOOSE FOR FIELD INSTALLATION

PLAN VIEW – HOOD #2 (Hood 2)
7' 10.00" LONG 5430ND-2-ACPSP-F

ACPSP SHIPS LOOSE FOR FIELD INSTALLATION



SECTION VIEW – MODEL 5430ND-2-ACPSP-F
HOOD – #1 (Hood 1)



SECTION VIEW – MODEL 5430ND-2-ACPSP-F
HOOD – #2 (Hood 2)

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SHEET NAME: **CAPTIVEAIRE DRAWINGS**

DATE: 11/08/21 | PROJECT NO: SHK-21-008

DRAWN: | SCALE: NTS

SHEET NO: **M802**

FIRE SYSTEM INFORMATION – JOB#5505815

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		TANK FS	4.0/4.0/4.0	56	FIRE CABINET LEFT	LEFT, HOOD 1
2		PCU TANK	4.0/4.0	24	WALL UTILITY CABINET LEFT	N/A

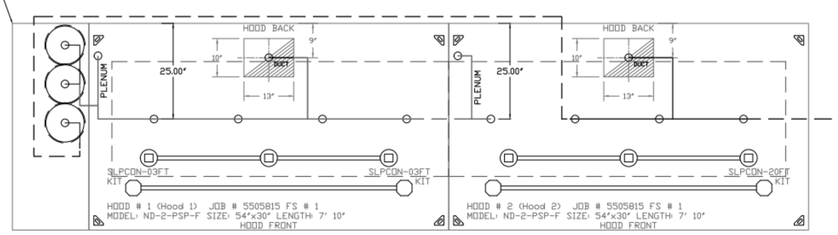
GAS VALVE(S)

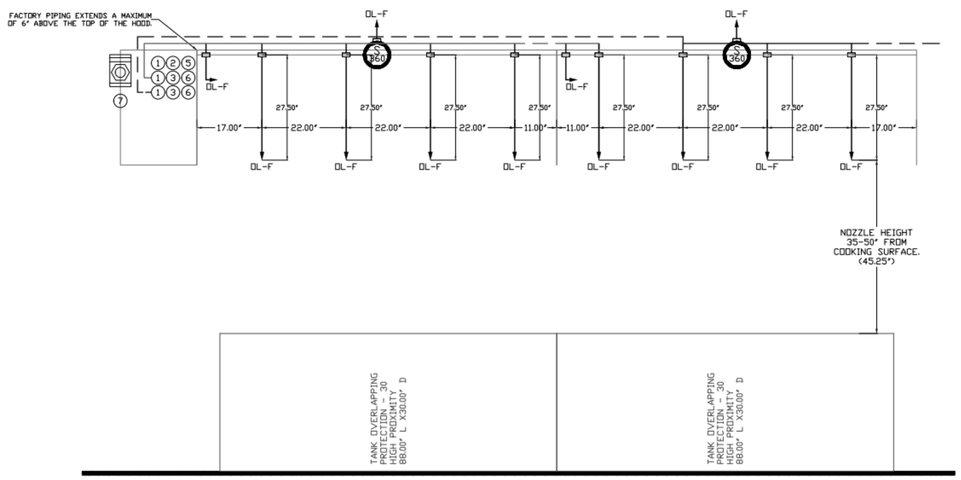
FIRE SYSTEM NO	TAG	TYPE	SIZE	SUPPLIED BY
1		SC ELECTRICAL	VERIFY	CAPTIVEAIRE SYSTEMS

WALL-MOUNT UTILITY CABINET

HOOD NO	LOCATION	SIZE	UTILITY CABINET(S)				
			FIRE SYSTEM		ELECTRICAL	SWITCHES	WEIGHT
			TYPE	SIZE	MODEL #	QUANTITY	
1	WALL MNT	12"x36"x24"	PCU TANK	4.0/4.0			300.00 LBS

- SYSTEM REQUIRES A MINIMUM OF 7 FT OF EQUIVALENT PIPE LENGTH BETWEEN TANK AND NEAREST APPLIANCE NOZZLE FOR MOST APPLIANCES. EACH 90 DEGREE ELBOW ADDS 1.3 FT OF EQUIVALENT LENGTH. SEE MANUAL FOR DETAILS





NOTES
- FIELD PIPE DROPS AS SHOWN
  PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
- IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.

- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS

JOB #: 5505815.
JOB NAME: SHAKE SHACK-1398-KOREA TOWN-R3.

SYSTEM SIZE: TANK-SP-3 TOTAL FP REQUIRED: 56.
HOOD # 1 7' 10.00" LONG x 54" WIDE x 30" HIGH.
RISER # 1 SIZE: 10" x 13".
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.
HOOD # 2 7' 10.00" LONG x 54" WIDE x 30" HIGH.
RISER # 1 SIZE: 10" x 13".
HOOD # 2 METAL BLOW-OFF CAPS INCLUDED.

- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

LEGEND – FIRE CABINET TANK SYSTEM

1 4 GALLON TANK.
2 PRIMARY ACTUATOR RELEASE.
3 SECONDARY ACTUATOR RELEASE.
4 PRESSURE SUPERVISION SWITCH.
5 PRIMARY HOSE ASSEMBLY.
6 SECONDARY HOSE ASSEMBLY.
7 REMOTE MANUAL ACTUATION DEVICE.

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DWG.#: 5505815

DRAWN BY: EB-108

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SHEET NO. 3

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SHEET NAME: **CAPTIVEAIRE DRAWINGS**

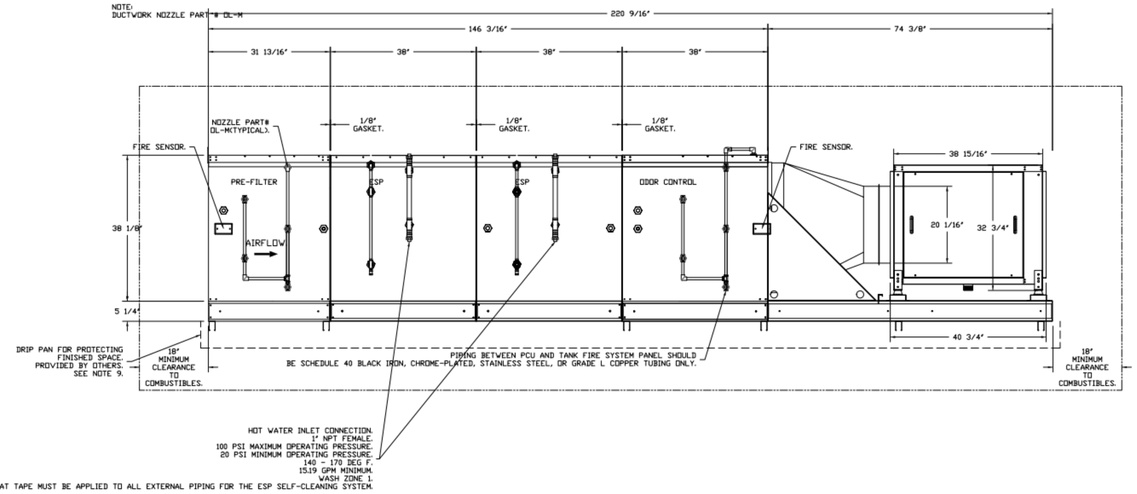
DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN:
SCALE: NTS

SHEET NO: **M803**

POLLUTION CONTROL UNIT FIRE SYSTEM

FAN #1 SIF20DD-HESS-UL762 - EXHAUST FAN (ESP-1) - POLLUTION CONTROL UNIT WITH FIRE SYSTEM INSTALLED. INCLUDES STEEL PRE FILTER MODULE, DUAL ESP MODULES, AND ODOR CONTROL MODULE PREPIPED WITH DOWNSTREAM PROTECTION. ELECTRIC FIRE DETECTOR AND NOZZLES ARE INCLUDED.

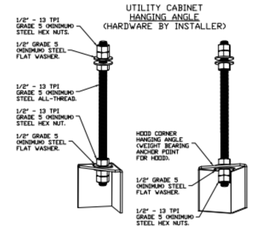
NOTE:
DUCTWORK NOZZLE PART # DL-M

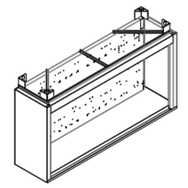


NOTE: IF THE PCU IS MOUNTED OUTDOORS, HEAT TAPE MUST BE APPLIED TO ALL EXTERNAL PIPING FOR THE ESP SELF-CLEANING SYSTEM.

WALL-MOUNT UTILITY CABINET ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH UTILITY CABINET HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.





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REGISTERED PROFESSIONAL ENGINEER DYNAN ESTRADA, JR. M38244 MECHANICAL STATE OF CALIFORNIA

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SHEET NAME: **CAPTIVEAIRE DRAWINGS**

DATE: 11/08/21 | PROJECT NO: SHK-21-008

DRAWN: | SCALE: NTS

SHEET NO: **M804**

EXHAUST FAN INFORMATION – JOB#5505815

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	WEIGHT (LBS)	SONES
1	ESP-1	1	SIF20DD	CAPTIVEAIRE	2742	1.250	1754	TEFC,PREMIUM	5.000	3.1950	3	208	14.5	2511	25

MUA FAN INFORMATION – JOB#5505815

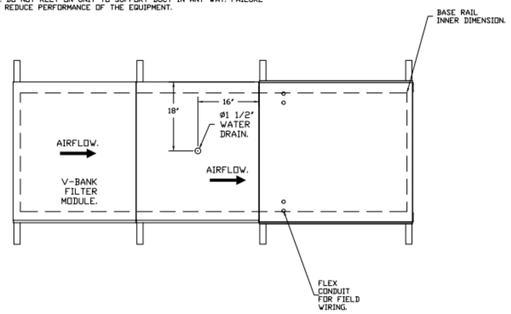
FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	EVAP FLOW RATE (Gal/Hr)	EVAP COOLER ENTERING DB TEMP	EVAP COOLER ENTERING WB TEMP	EVAP COOLER LEAVING DB TEMP	EVAP COOLER LEAVING WB TEMP	WEIGHT (LBS)	SONES
2	MAU-1	1	A2-20D	20MF-2-MOD	A2	1500	2508	0.500	1142	ODP,PREMIUM	1.000	0.8100	3	208	3.8	4.8A	15A	4	90.0°F	64.0°F	71.0°F	64.0°F	668	12.6

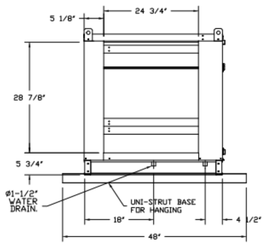
FAN OPTIONS

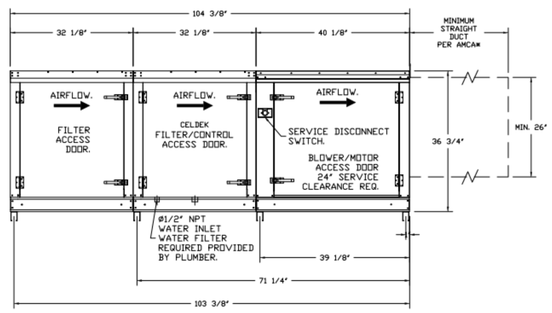
FAN UNIT NO	TAG	QTY	DESCRIPTION
1	ESP-1	1	SIF 20- SS LOW SP STRAIGHT DISCHARGE- SQUARE TO ROUND DISCHARGE ADAPTER
		1	SIF20 - INLET - STANDARD 20" DUCT CONNECTION
		1	PCU-SIZE 3 SIF-20 HESS
		1	RUBBER VIBRATION ISOLATORS (SET OF 4), ISQ16 THRU ISQ22
		1	SIF - HORIZONTAL FLOOR MOUNT - PRE-INSTALLED MOUNTS (11-36)
		1	OPPOSITE SIDE CONTROLS- SIF
		1	POLLUTION CONTROL UNIT WITH PREFILTER, DUAL ESP CELLS AND ODOR CONTROL FILTERS WITH INSTALLED ELECTRICAL DETECTION SYSTEM. PRESET TO ACTIVATE AT 360 DEGREES F. SIZE 3
		1	2 YEAR PARTS WARRANTY
2	MAU-1	1	OPPOSITE SIDE SUPPLY FAN CONTROLS
		1	EVAPORATIVE COOLER WIRING HARNESS
		1	INSULATION OPTION FOR V-BANK FILTER SECTION
		1	A2 INDOOR HANGING OPTION - INCLUDES 2 HSA125 HANGING SPRING ISOLATORS PER UNI-STRUT
		1	SEPARATE 120V WIRING PACKAGE (REQUIRED AND USED ONLY FOR DCV OR PREWIRE WITH VFD) - THREE PHASE ONLY
		1	2 YEAR PARTS WARRANTY

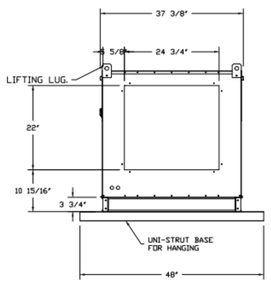
FAN #2 A2-20D - SUPPLY FAN (MAU-1)
1. UNTEMPERED SUPPLY UNIT WITH 20" MIXED FLOW DIRECT DRIVE FAN IN SIZE #2 HOUSING.
2. EVAP COOLER (CELDEK) & V-BANK WITH 2" EZ FILTERS - INDOOR.
3. SIDE DISCHARGE - AIR FLOW LEFT -> RIGHT.
4. MOUNT MOTOR AND DISCONNECT ON OPPOSITE SIDE OF FAN.
5. 120V WIRING CONNECTION TO ENERGIZE EVAPORATIVE COOLERS FROM UNTEMPERED SUPPLY FANS.
6. "INSULATION" FOR V-BANK INTAKE OPTION.
7. INDOOR HANGING CRABLE FOR THE SIZE 2 UNTEMPERED UNIT. 2 HSA125 HANGING ISOLATORS PER UNI-STRUT INCLUDED.
8. SEPARATE 120VAC WIRING PACKAGE FOR MAKE-UP AIR UNITS. OPTION MUST BE SELECTED WHEN MOUNTING VFD IN PREWIRE PANEL OR WITH DCV PACKAGE. PROVIDES SEPARATE 120VAC INPUT TO SUPPLY FAN. THIS 120V SIGNAL MUST BE RUN BY ELECTRICIAN FROM DCV TO MUA SWITCH.
9. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER/EVAP SECTION).
10. 2 YEAR PARTS WARRANTY

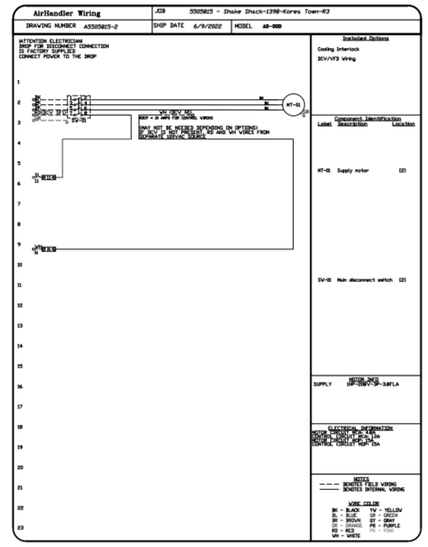
NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 26" x 26".

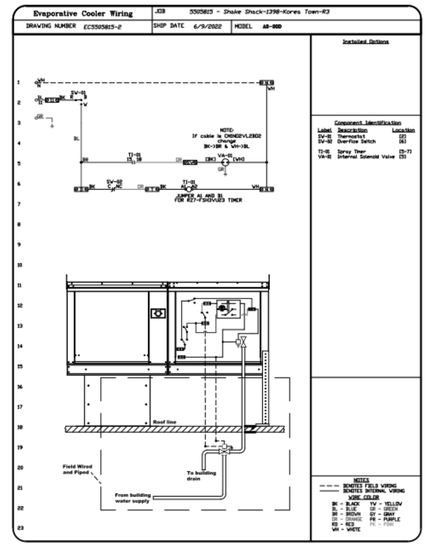












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DATE: 6/9/2022

DWG.#: 5505815

DRAWN BY: EB-108

SCALE:

MASTER DRAWING

SHEET NO. 5

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SHEET NAME: **CAPTIVEAIRE DRAWINGS**

DATE: 11/08/21 | PROJECT NO: SHK-21-008

DRAWN: | SCALE: NTS

SHEET NO: **M805**

DESCRIPTION:
FAN #1 SIF20DD-HESS-UL762 - EXHAUST FAN (ESP-1) - POLLUTION CONTROL UNIT WITH FIRE SYSTEM INSTALLED. INCLUDES STEEL PRE FILTER MODULE, DUAL ESP MODULES, AND ODOR CONTROL MODULE PREPIPED WITH DOWNSTREAM PROTECTION. ELECTRIC FIRE DETECTOR AND NOZZLES ARE INCLUDED.

NOTES:
1. ALL DIMENSIONS ARE NOMINAL AND GIVEN IN INCHES.

2. C/US UL710 LISTED FOR GREASE DUCT INSTALLATION.

3. UL762 RATED DIRECT DRIVE SQUARE INLINE FAN WITH 20.75" HIGH EFFICIENCY MIXED FLOW WHEEL.

4. WHEN USED IN KITCHEN GREASE DUCT, UNIT MUST BE INSTALLED DOWNSTREAM OF A LISTED HOOD ASSEMBLY OF A UL710 LISTED HOOD ASSEMBLY OR A NFPA 96 COMPLIANT HOOD AS LONG AS IT IS INSTALLED WITH A FIRE SUPPRESSION SYSTEM THAT IS INTERLOCKED WITH THE NFPA 96 COMPLIANT HOOD FIRE SYSTEM.

5. CLEARANCE ON FILTER ACCESS SIDE OF THE PCU SHOULD BE A MINIMUM OF 36" FOR PROPER SERVICE OF THE UNIT. ALL OTHER SIDES SHOULD FOLLOW CLEARANCE TO COMBUSTIBLE GUIDELINES PER CODE.

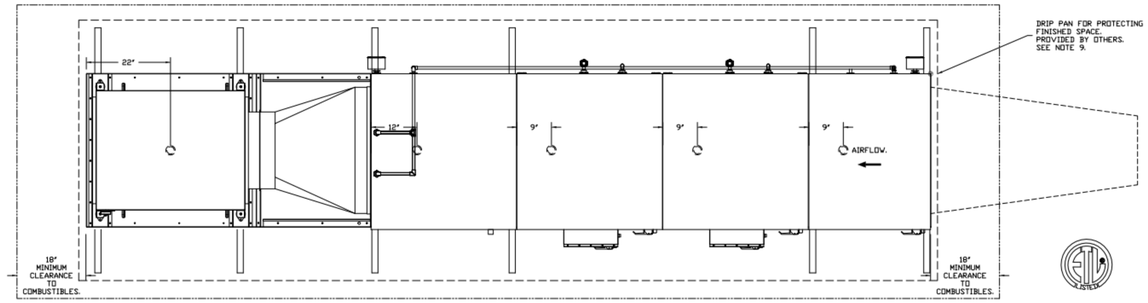
6. UNIT CONTAINS PRESSURE MONITORING SWITCH. REFER TO ELECTRICAL SCHEMATIC OR OPERATION MANUAL FOR MORE INFORMATION.

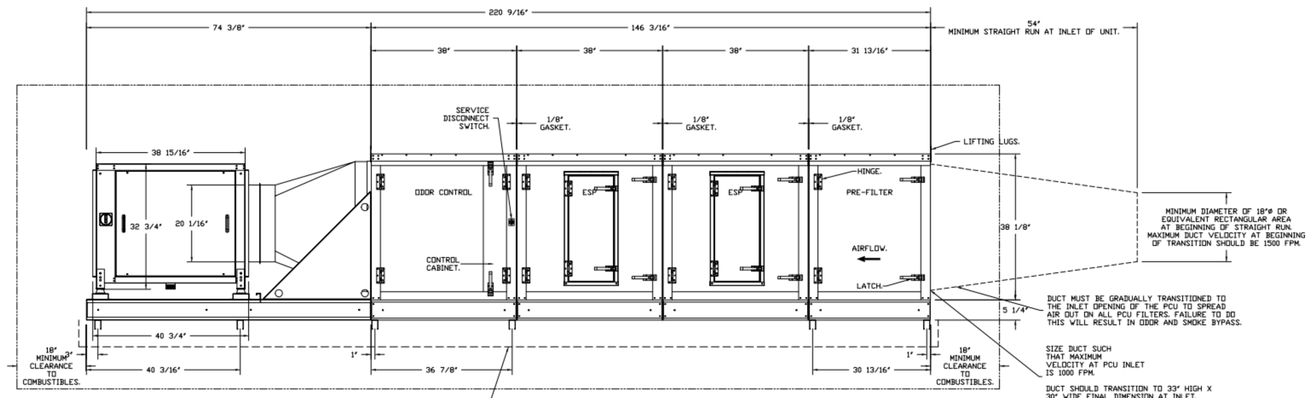
7. 1.5" NPT DRAIN SUPPLIED IN EACH MODULE BASE. CONNECT INDIVIDUAL DRAINS TO A COMMON 2 1/2" DRAIN AND ROUTE TO GREASE INTERCEPTOR.

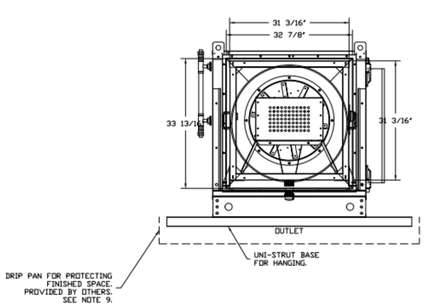
8. FIRE SYSTEM TO BE INSTALLED INDOORS OR IN A WEATHERTIGHT ENCLOSURE MAINTAINED BETWEEN 32° AND 130° F. THIS ENCLOSURE IS PROVIDED BY OTHERS.

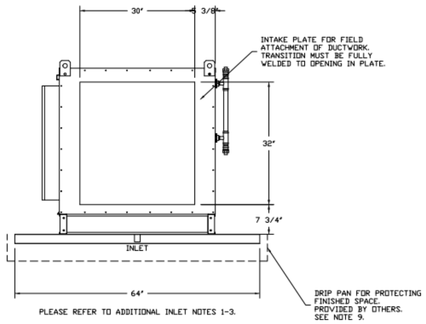
9. WHEN THE PCU IS INSTALLED ABOVE OR NEAR A FINISHED SPACE, THE INSTALLING CONTRACTOR MUST PROTECT THE FINISHED SPACE TO PREVENT WATER DAMAGE IN THE EVENT OF A FIRE SYSTEM DISCHARGE OR WHEN REGULAR CLEANING IS PERFORMED ON THE UNIT.

10. POLLUTION CONTROL UNIT IS RATED FOR INDOOR USE WHEN INSTALLED IN ACCORDANCE WITH IMC 506.5.2.4, INCLUDING THE USE OF A FIRE RATED ENCLOSURE AS APPLICABLE.









PLEASE REFER TO ADDITIONAL INLET NOTES 1-3.

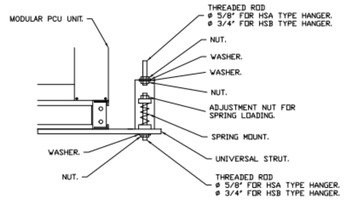
INLET NOTES:
1. LENGTH OF STRAIGHT DUCT ON INLET OF PCU TO BE 3 TIMES THE EQUIVALENT DUCT DIAMETER TO AVOID SYSTEM EFFECT.

2. MAX INLET DUCT VELOCITY TO BE 1000 FPM INTO THE PCU. DUCTWORK SHOULD BE SIZED APPROPRIATELY.

3. DUCT MUST BE GRADUALLY TRANSITIONED TO THE INLET OPENING OF THE PCU TO SPREAD AIR OUT ON ALL PCU FILTERS. FAILURE TO DO THIS WILL RESULT IN ODOR AND SMOKE BYPASS.

-A SERVICE PLATFORM MUST BE INSTALLED ON THE FILTER SIDE OF THE UNIT FOR PROPER FILTER MAINTENANCE.
-THE PLATFORM MUST BE THE SAME LENGTH AS THE PCU AND AT LEAST 3 FEET WIDE.
-THE PLATFORM MUST BE STRUCTURALLY SUPPORTED BY THE BUILDING, INDEPENDENT OF THE PCU.
-THE PLATFORM MUST BE DESIGNED TO PROPERLY SUPPORT THE WEIGHT OF ALL PCU FILTERS AND MAINTENANCE PERSONNEL.
-HANDRAILS MUST BE INSTALLED ON THE SERVICE PLATFORM TO PROTECT MAINTENANCE PERSONNEL.

FAN #1 SIF20DD-HESS-UL762 - EXHAUST FAN (ESP-1) - PCU #1 PCU-PF-ESP-ESP-DC-REFS-3
FAN WEIGHT = 2511LBS
PCU LOCATION: INDOOR (CONDITIONED SPACE).
NOTE: TWO HANGERS PER UNIVERSAL STRUT.



TYPICAL "HS" UNIT SPRING MOUNTING

FAN OPTIONS:

- SIF 20- SS LOW SP STRAIGHT DISCHARGE- SQUARE TO ROUND DISCHARGE ADAPTER
- SIF20 - INLET - STANDARD 20" DUCT CONNECTION
- PCU-SIZE 3 SIF-20 HESS
- RUBBER VIBRATION ISOLATORS (SET OF 4), ISQ16 THRU ISQ22
- SIF - HORIZONTAL FLOOR MOUNT - PRE-INSTALLED MOUNTS (11-36)
- OPPOSITE SIDE CONTROLS- SIF
- POLLUTION CONTROL UNIT WITH PREFILTER, DUAL ESP CELLS AND ODOR CONTROL FILTERS WITH INSTALLED ELECTRICAL DETECTION SYSTEM. PRESET TO ACTIVATE AT 360 DEGREES F. SIZE 3
- 2 YEAR PARTS WARRANTY

PCU OPTIONS:
- INDOOR HANGING CRADLE FOR SIZE 3 PCU WITH 3 OR 4 MODULES AND USBI BLOWER. 6 PIECES OF UNI-STRUT, 64 INCHES LONG EACH. 2 HSA310 HANGING ISOLATORS PER UNI-STRUT INCLUDED. FOR USE WITH USBI BLOWERS.
- PCUAFM WITH HMI SCREEN, BACK PLATE WITH LABEL, AIRLINES/QUICK CONNECTS/AIR PROBES, CONDUIT/FITTINGS/WIRING HARNESS.
- INTAKE PLATE FOR SIZE 3 PCU WITH 30" X 33" HOLE FOR DUCT CONNECTIONS FOR USE WITH CUSTOM DUCT FITMENT OR FIELD FITMENT.

REVISIONS

	DESCRIPTION	DATE
△		
△		
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△		

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www.captiveaire.com

Shake Shack-1398-Korea Town-R3
LOS ANGELES, CA, 90010

DATE: 6/9/2022

DWG.#: 5505815

DRAWN BY: EB-108

SCALE:

MASTER DRAWING

SHEET NO. 6

zebra
ZEBRA PROJECTS, INC.
14614 N KIERLAND BLVD. SUITE N 300
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REVISION

	DATE	DESCRIPTION
△	11/08/21	PERMIT/BID SET
A	01/26/22	REVISION A
1	07/01/22	REVISION 1
4	09/16/22	REVISION 4

STATUS: PERMIT/BID SET

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REGISTERED PROFESSIONAL ENGINEER OTTONY ESTRADA, JR. M38244 MECHANICAL STATE OF CALIFORNIA

FIELD VERIFICATION:
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SHEET NAME: CAPTIVEAIRE DRAWINGS

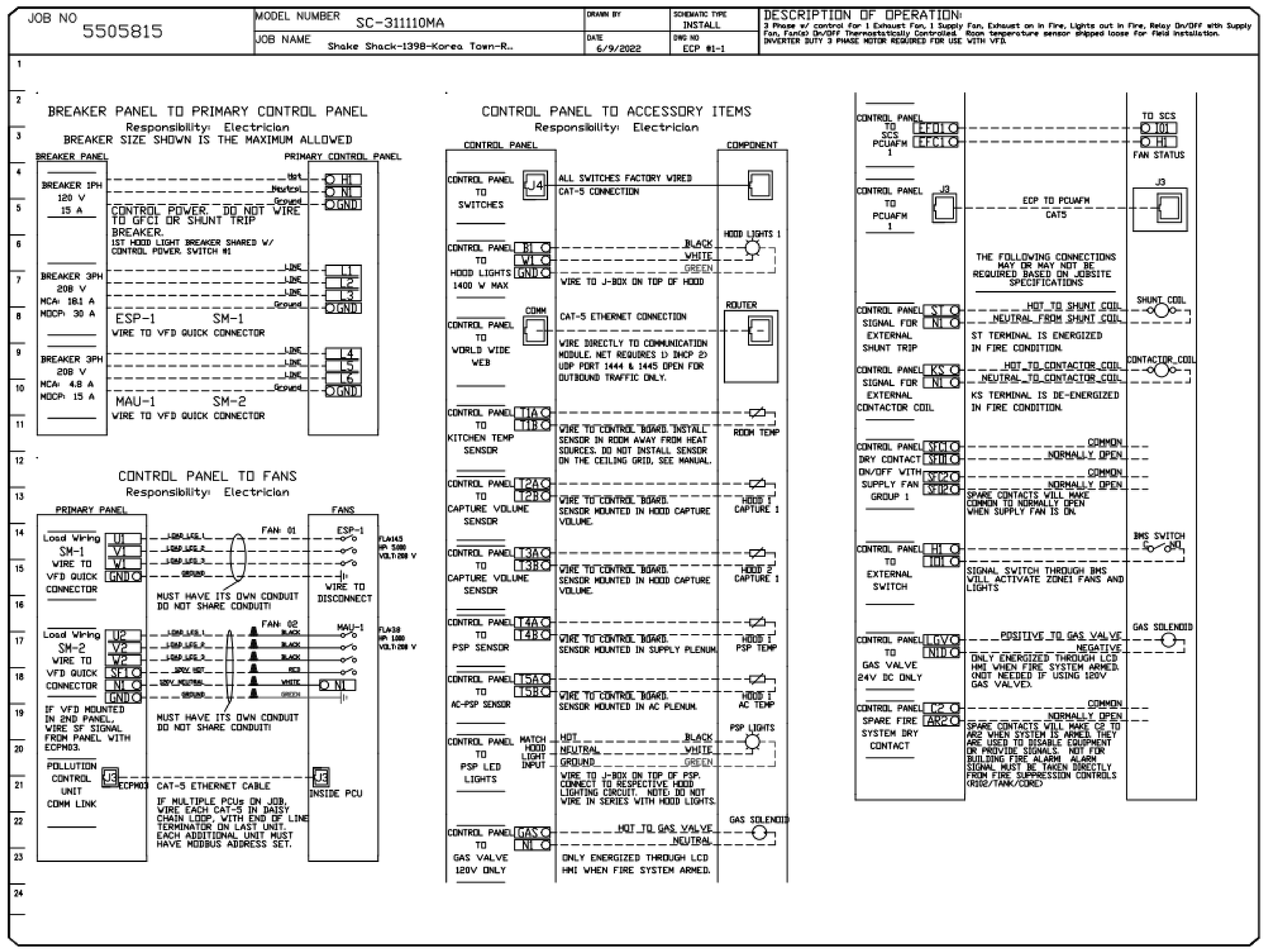
DATE: 11/08/21 | PROJECT NO: SHK-21-008

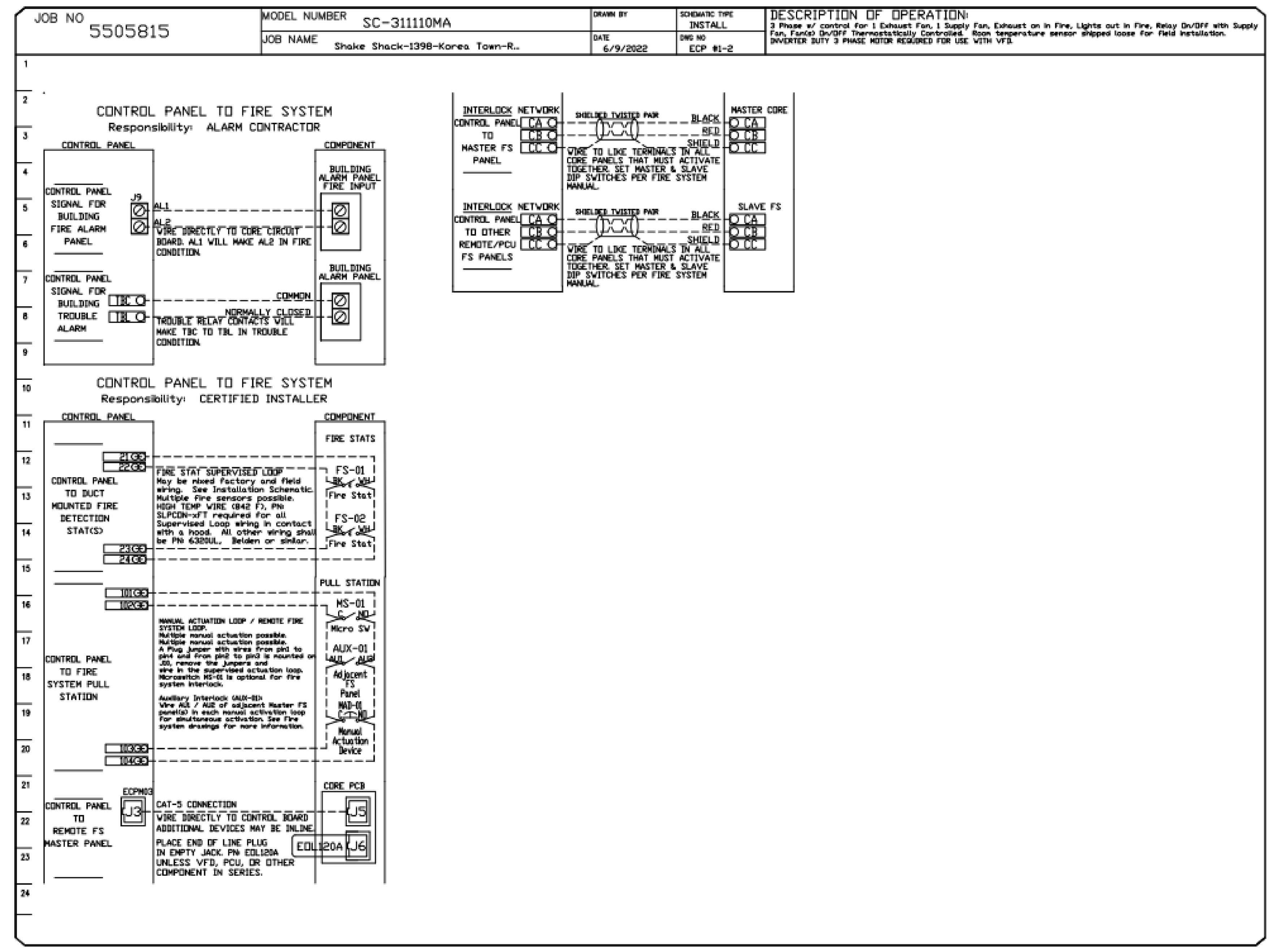
DRAWN: | SCALE: NTS

SHEET NO: **M806**

ELECTRICAL PACKAGE - JOB#5505815

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	ɸ	HP	VOLT	FLA
1		SC-311110MA	WALL MOUNT IN SS BOX	05 - SS WALL MOUNT BOX	1 LIGHT 1 FAN	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	ESP-1	EXHAUST	3	5.000	208	14.5
							MAU-1	SUPPLY	3	1.000	208	3.8
2		SCS150H1C0		29 - SCS DOOR		SCS BASE WD OPTION						





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Shake Shack-1398-Korea Town-R3
LOS ANGELES, CA, 90010

DATE: 6/9/2022

DWG.#: 5505815

DRAWN BY: EB-108

SCALE: 3/4" = 1'-0"

MASTER DRAWING

SHEET NO. 7

zebra

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SHEET NAME: CAPTIVEAIRE DRAWINGS

DATE: 11/08/21
PROJECT NO: SHK-21-008

DRAWN:
SCALE: NTS

SHEET NO: M807

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JOB NO 5505815	MODEL NUMBER PCU #1	DRAWN BY	SCHEMATIC TYPE INSTALL	DESCRIPTION OF OPERATION:
	JOB NAME Shake Shack-1398-Korea Town-R..	DATE 6/9/2022	DWG NO PCU #1	

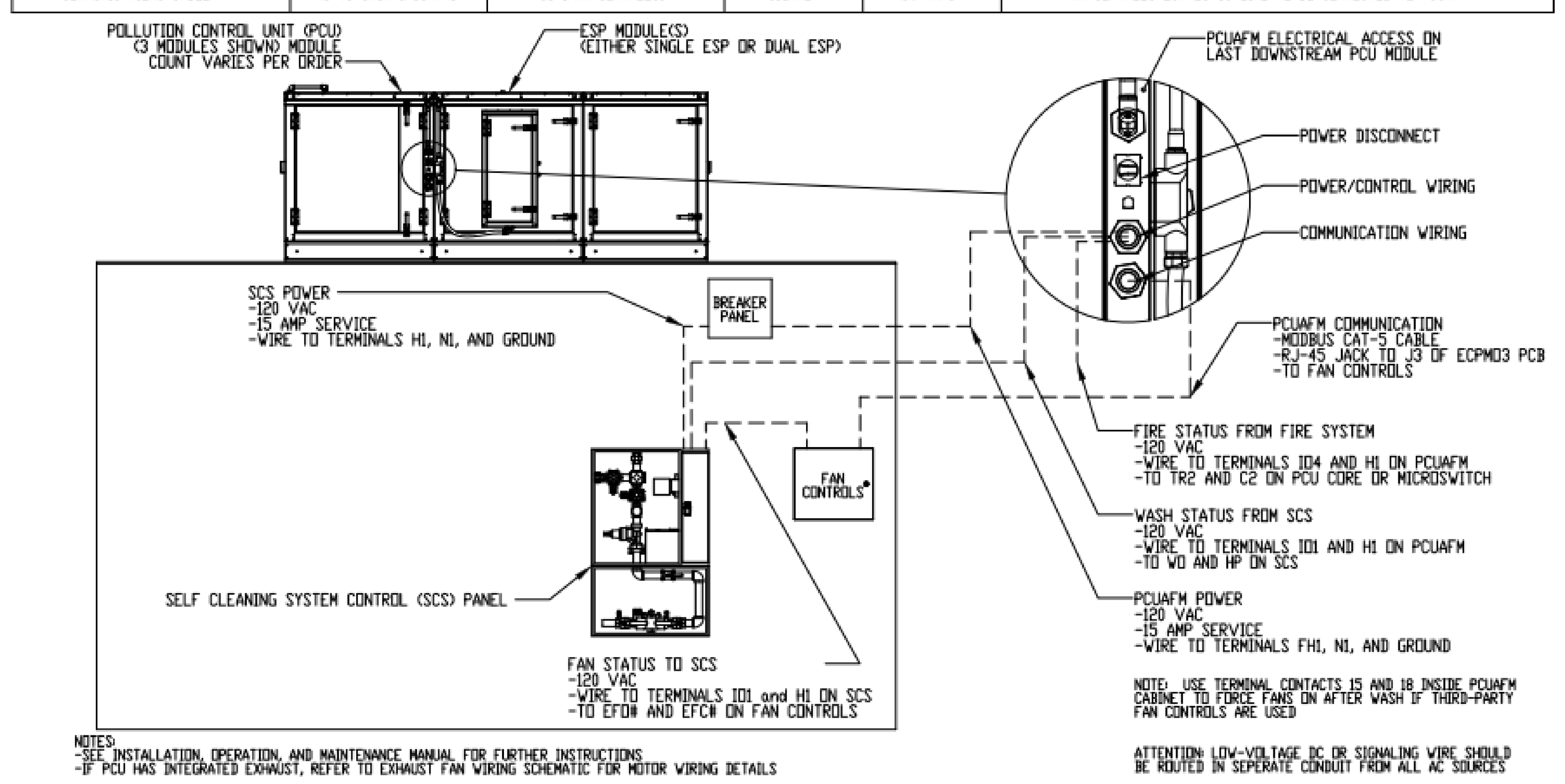
PCU ESP ELECTRICAL AND LOW-VOLTAGE DETAIL

11/1/2021 Rev. 0

ELECTRICIAN:
1) WIRE MAIN CONTROL PANELS PER INCLUDED SCHEMATIC

ELECTRICAL CONTRACTOR REQUIREMENT					
ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
PCUAFM POWER	FH1, N1, GROUND [PCUAFM]	CIRCUIT BREAKER [SUPPLY POWER]	120 VAC	15 AMPS	
SCS POWER	H1, N1, GROUND [SCS]	CIRCUIT BREAKER [SUPPLY POWER]	120 VAC	15 AMPS	
PCUAFM WASH STATUS FROM SCS	ID1, H1 [PCUAFM]	WO, HP [SCS]	120 VAC	<1.0 AMPS	RELAY CONTACTS CLOSED DURING WASH IN SCS
PCUAFM FIRE STATUS FROM FS	ID4, H1 [PCUAFM]	TR2, C2 [FS]	120 VAC	<1.0 AMPS	RELAY CONTACTS CLOSED IN FIRE IN PCU CORE OR OTHER FIRE SYSTEM
FAN STATUS TO SCS	ID1, H1 [SCS]	EFO#, EFC# [FAN CONTROLS]	120 VAC	<1.0 AMPS	RELAY CONTACTS CLOSED WHEN FANS ARE ON IN FAN CONTROLS
COMMUNICATIONS CABLE	RJ-45 JACK [PCUAFM]	J3 [FAN CONTROLS]	SIGNAL	<1.0 AMPS	FAN CONTROLS ECPM03 J3 LINE TO BE CONNECTED TO PCUAFM

ELECTRICAL CONTRACTOR



NOTE: USE TERMINAL CONTACTS 15 AND 18 INSIDE PCUAFM CABINET TO FORCE FANS ON AFTER WASH IF THIRD-PARTY FAN CONTROLS ARE USED

NOTES:
-SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS
-IF PCU HAS INTEGRATED EXHAUST, REFER TO EXHAUST FAN WIRING SCHEMATIC FOR MOTOR WIRING DETAILS

ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPERATE CONDUIT FROM ALL AC SOURCES

JOB NO 5505815	MODEL NUMBER SC-311110MA	DRAWN BY	SCHEMATIC TYPE INSTALL	DESCRIPTION OF OPERATION: Fire System #1 TANK FS - 4.0/4.0/4.0. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet separate from prewire. Includes 12" box housing circuit board, batteries, and terminals for connection to main control panel.
	JOB NAME Shake Shack-1398-Korea Town-R..	DATE 6/9/2022	DWG NO ECP #1-3	

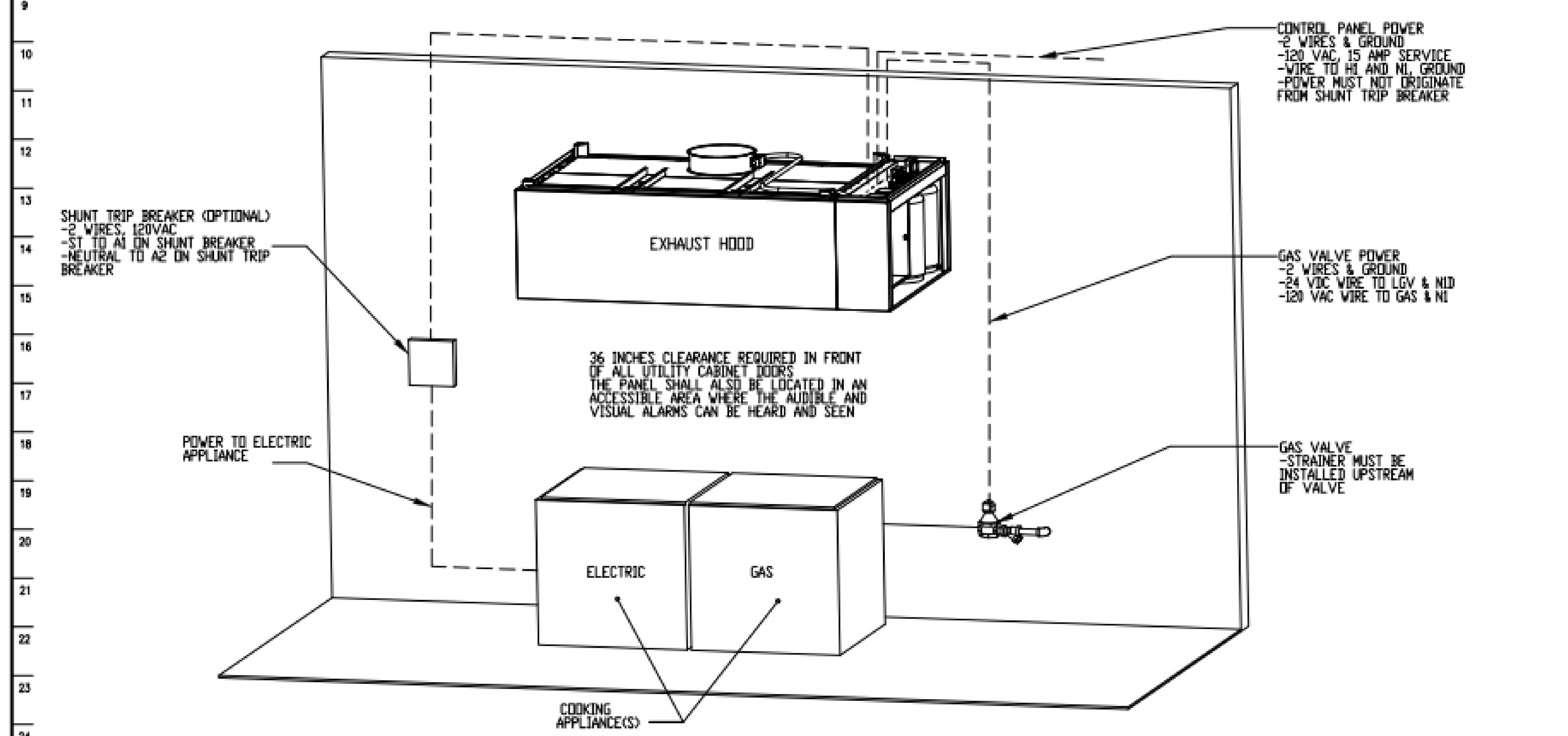
TANK PROTECTION ELECTRICAL DETAIL

02/10/2021 Rev. 2

FS-1: MASTER

ELECTRICIAN:
1. WIRE MAIN CONTROL PANEL PER INCLUDED SCHEMATIC
2. WIRE ALL FANS PER INCLUDED SCHEMATIC
3. WIRE SHUNT TRIP BREAKER (OPTIONAL)
4. WIRE UDS APPLIANCE KILL SWITCH, IF EQUIPPED (OPTIONAL)
5. WIRE GAS VALVE

ELECTRICAL CONTRACTOR REQUIREMENT					
ITEM	CONNECTION IN PANEL	CONNECTION IN DEVICE	VOLTAGE	AMPERAGE	COMMENTS
SHUNT TRIP BREAKER (OPTIONAL)	ST & N1	BREAKER COIL (A1 & A2)	120 VAC	< 4 AMPS	ST TO A1 ON SHUNT BREAKER COIL, AND NEUTRAL TO A2 ON SHUNT TRIP BREAKER COIL
CONTROL PANEL POWER	H1 & N1 + GROUND	CIRCUIT BREAKER	120 VAC	15 AMPS	CONTROL PANEL POWER MUST NOT BE RUN THROUGH SHUNT TRIP BREAKER
UDS APPLIANCE KILL SWITCH (OPTIONAL)	KTS & N1	KTS & N1	120 VAC	< 4 AMPS	KILL SWITCH TERMINALS MUST BE IN SERIES WITH OTHER KILL SWITCHES
REMOTE 120VAC ANSUL AUTOMAN (OPTIONAL)	AU1, AU2	SOLENOID	120 VAC	< 6 AMPS	120V TO AU1, AU2 TO ANSUL ELECTRIC AUTOMAN, ANSUL SOLENOID TO NEUTRAL
GAS VALVE	LGV & N10 (IF 24 VDC) GAS & N1 (IF 120 VAC)	RED/RED/GREEN	24 VDC OR 120 VAC	< 1.0 AMPS	IF 24 VDC - 2 WIRES & GROUND, N10 TO RED, LGV TO RED, AND GREEN TO GROUND IF 120 VAC - 2 WIRES & GROUND GAS TO RED, N1 TO RED, AND GREEN TO GROUND



NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

JOB NO 5505815	MODEL NUMBER SC-311110MA	DRAWN BY	SCHEMATIC TYPE INSTALL	DESCRIPTION OF OPERATION: Fire System #1 TANK FS - 4.0/4.0/4.0. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet separate from prewire. Includes 12" box housing circuit board, batteries, and terminals for connection to main control panel.
	JOB NAME Shake Shack-1398-Korea Town-R..	DATE 6/9/2022	DWG NO ECP #1-4	

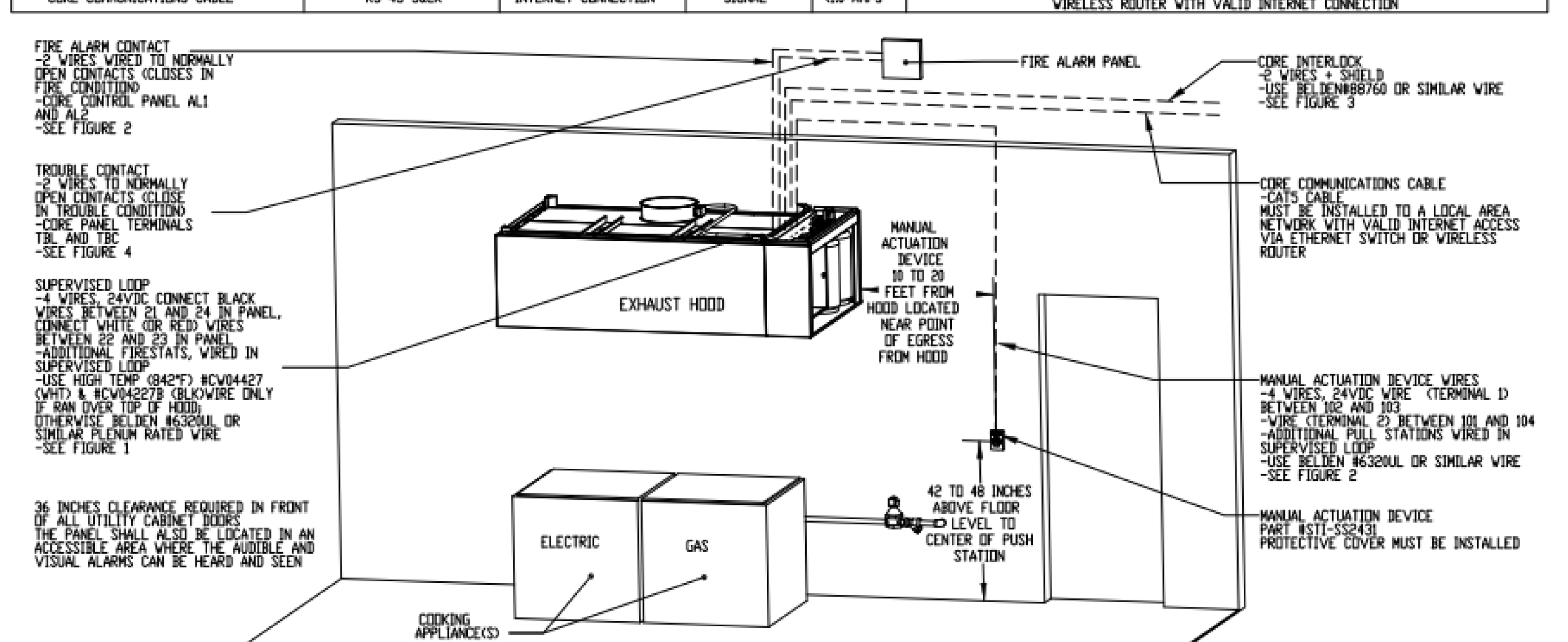
TANK PROTECTION LOW-VOLTAGE DETAIL

02/10/2021 Rev. 2

FS-1: MASTER

ALARM CONTRACTOR:
1. WIRE MANUAL ACTUATION DEVICE(S), REMOTE FIRESTAT(S), CORE INTERLOCK(S), FIRE SENSOR(S) AND FIRE ALARM CONTACTS
2. COMPLETE FINAL HOOKUP OF SYSTEM
3. VERIFY FINAL FIRE SYSTEM TEST

ALARM CONTRACTOR REQUIREMENT					
ITEM	CONNECTION IN PANEL	CONNECTION ON DEVICE	VOLTAGE	AMPERAGE	COMMENTS
MANUAL ACTUATION DEVICE(S)	101 AND 104 102 AND 103	1 & 2	24 VDC	< 1.0 AMPS	WIRE MANUAL ACTUATION DEVICE TERMINAL 1 BETWEEN CORE PANEL TERMINALS 102 AND 103 WIRE MANUAL ACTUATION DEVICE TERMINAL 2 BETWEEN CORE PANEL TERMINALS 101 AND 104 JUMPER 101 TO 104 AND 102 TO 103 IF NO MANUAL ACTUATION DEVICE IS INSTALLED
MANUAL ACTUATION DEVICE COVER	N/A	N/A	N/A	N/A	MANUAL ACTUATION DEVICE COVER MUST BE INSTALLED IF SURFACE MOUNTED, USE COVER EXTENSION STI-6531B
REMOTE FIRESTAT SENSOR(S)	21 AND 24 22 AND 23	BLACK AND WHITE	24 VDC	< 1.0 AMPS	WIRE FIRE SENSOR WHITE WIRES BETWEEN HOOD CORE PANEL TERMINALS 22 AND 23 WIRE FIRE SENSOR BLACK WIRE BETWEEN HOOD CORE PANEL TERMINALS 21 AND 24 HIGH TEMP (842°F) #CW04427 (WHT) & #CW04427B (BLK)WIRE OR SIMILAR ONLY IF RAN OVER TOP OF HOOD; OTHERWISE BELDEN #6320UL OR SIMILAR PLENUM RATED WIRE; SEE FIGURE 1
FIRE ALARM CONTACT	AL1, AL2	VARIES	50V MAX (AC/DC)	UP TO 1 AMP	FIRE ALARM RELAY CONTACTS FOR BUILDING FIRE ALARM LOCATED IN THE CORE ELECTRICAL CONTROL PANEL
CORE INTERLOCK(S)	ILA, ILB, ILC	ILA, ILB, ILC	RS-485 COMMUNICATIONS SIGNAL		CORE SYSTEM (1) ILA, TO CORE SYSTEM (2) ILA. CORE SYSTEM (1) ILB, TO CORE SYSTEM (2) ILB CORE SYSTEM (1) ILC, TO CORE SYSTEM (2) ILC. USE BELDEN# 88760 OR SIMILAR WIRE
TROUBLE CONTACT	TBC, TBL, TOK	VARIES	MAX 120 VAC	UP TO 6 AMPS	WIRE TO TBL & TBC NORMALLY OPEN CONTACT, CLOSES IN TROUBLE CONDITION
CORE COMMUNICATIONS CABLE	RJ-45 Jack	INTERNET CONNECTION	SIGNAL	<1.0 AMPS	TYPICAL CONNECTION CAT5 CABLE TO LOCAL AREA NETWORK VIA ETHERNET SWITCH OR WIRELESS ROUTER WITH VALID INTERNET CONNECTION



ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

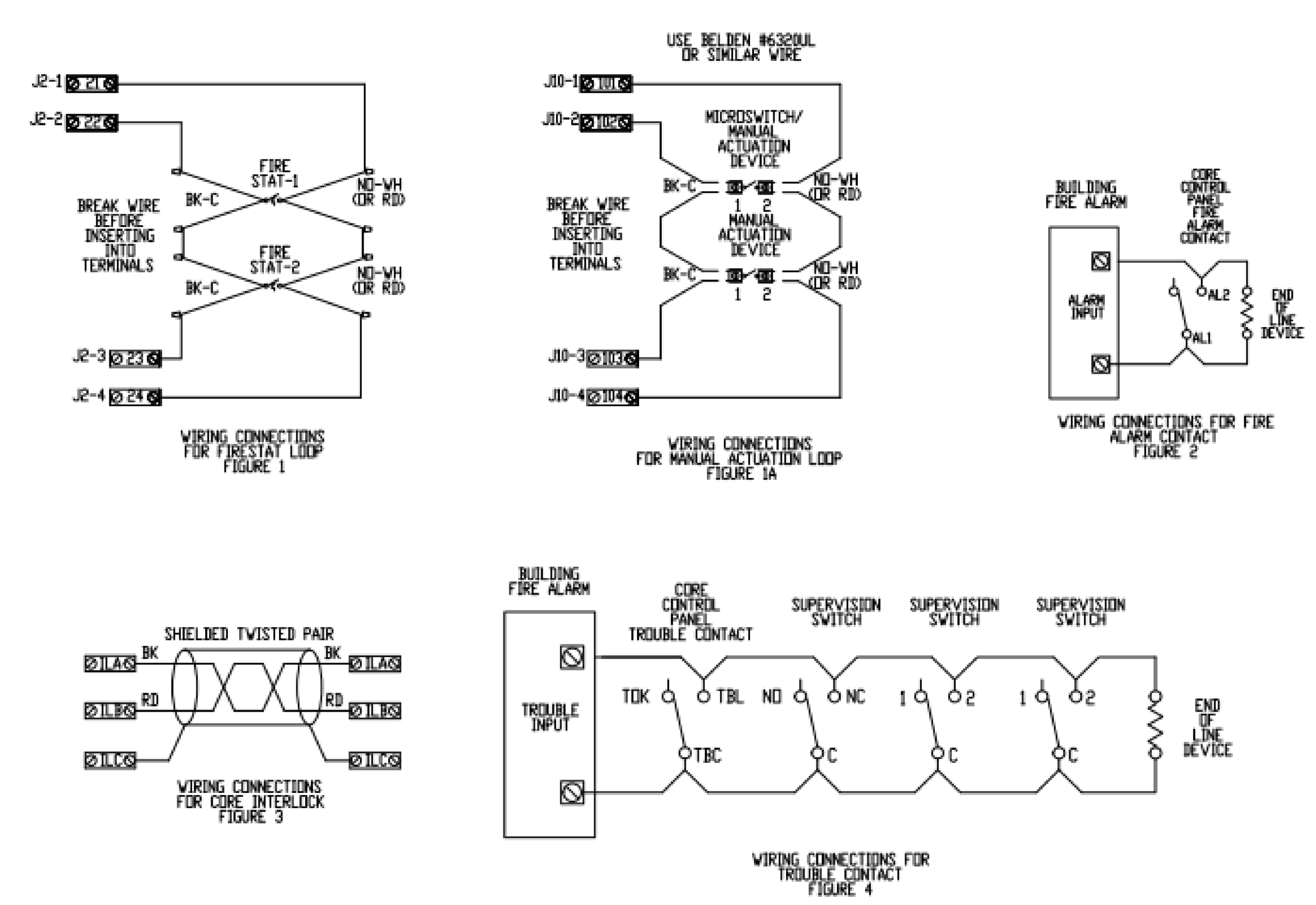
NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

JOB NO 5505815	MODEL NUMBER SC-311110MA	DRAWN BY	SCHEMATIC TYPE INSTALL	DESCRIPTION OF OPERATION: Fire System #1 TANK FS - 4.0/4.0/4.0. Tank-based Fire Protection System equipped with Electronic Detection utilizing CORE board as a Listed Release Mechanism. Installed in Hood Utility Cabinet separate from prewire. Includes 12" box housing circuit board, batteries, and terminals for connection to main control panel.
	JOB NAME Shake Shack-1398-Korea Town-R..	DATE 6/9/2022	DWG NO ECP #1-5	

TANK PROTECTION LOW-VOLTAGE FIGURES

02/10/2021 Rev. 17

FS-1: MASTER



NOTE: SEE INSTALLATION, OPERATION, AND MAINTENANCE MANUAL FOR FURTHER INSTRUCTIONS

ATTENTION: LOW-VOLTAGE DC OR SIGNALING WIRE SHOULD BE ROUTED IN SEPARATE CONDUIT FROM ALL AC SOURCES

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DESCRIPTION	DATE:
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Shake Shack-1398-Korea Town-R3
LOS ANGELES, CA, 90010

DATE: 6/9/2022
DWG.#: 5505815
DRAWN BY: EB-108
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 8

STORE NO: CA #1398

SHAKE SHACK
SHAKE SHACK - KOREATOWN
3786 WILSHIRE BLVD. LOS ANGELES, CA 90010

REVISION		
△	DATE	DESCRIPTION
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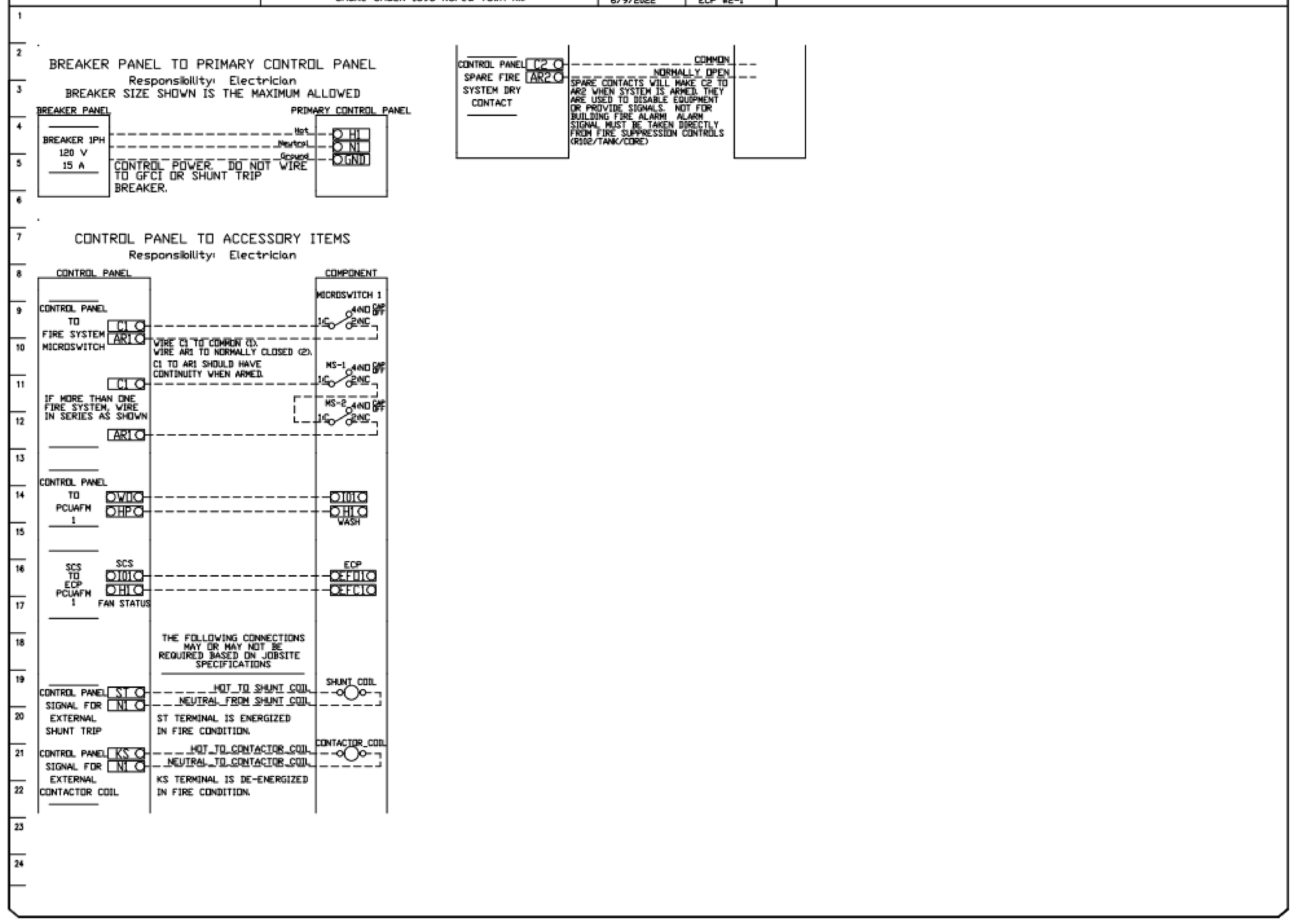
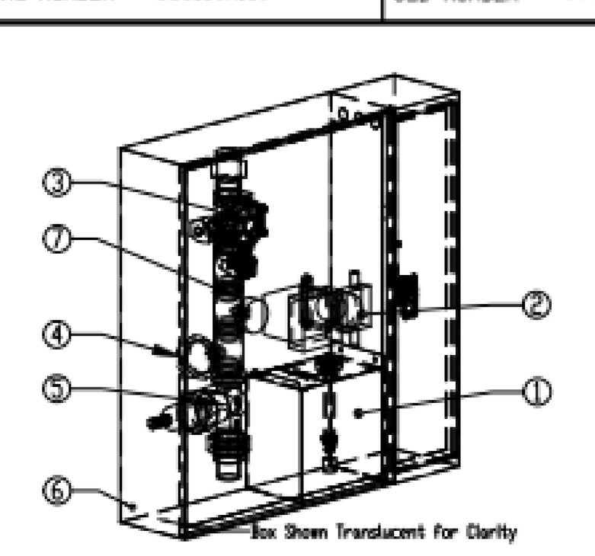
SHEET NAME: CAPTIVEAIRE DRAWINGS

DATE: 11/08/21
PROJECT NO: SHK-21-008
DRAWN:
SCALE: NTS
SHEET NO: M808

JOB NO	MODEL NUMBER	DRAWN BY	SCHEMATIC TYPE	DESCRIPTION OF OPERATION:
5505815	SCS150H1C0		INSTALL	Self Cleaning System, Smart Controls - 1.5" Manifold, Hot Water Wash, One zone, Programmable Schedule, Back Flow Preventer.
	JOB NAME: Shake Shack-1398-Korea Town-R...	DATE: 6/9/2022	DWG NO: ECP #2-1	

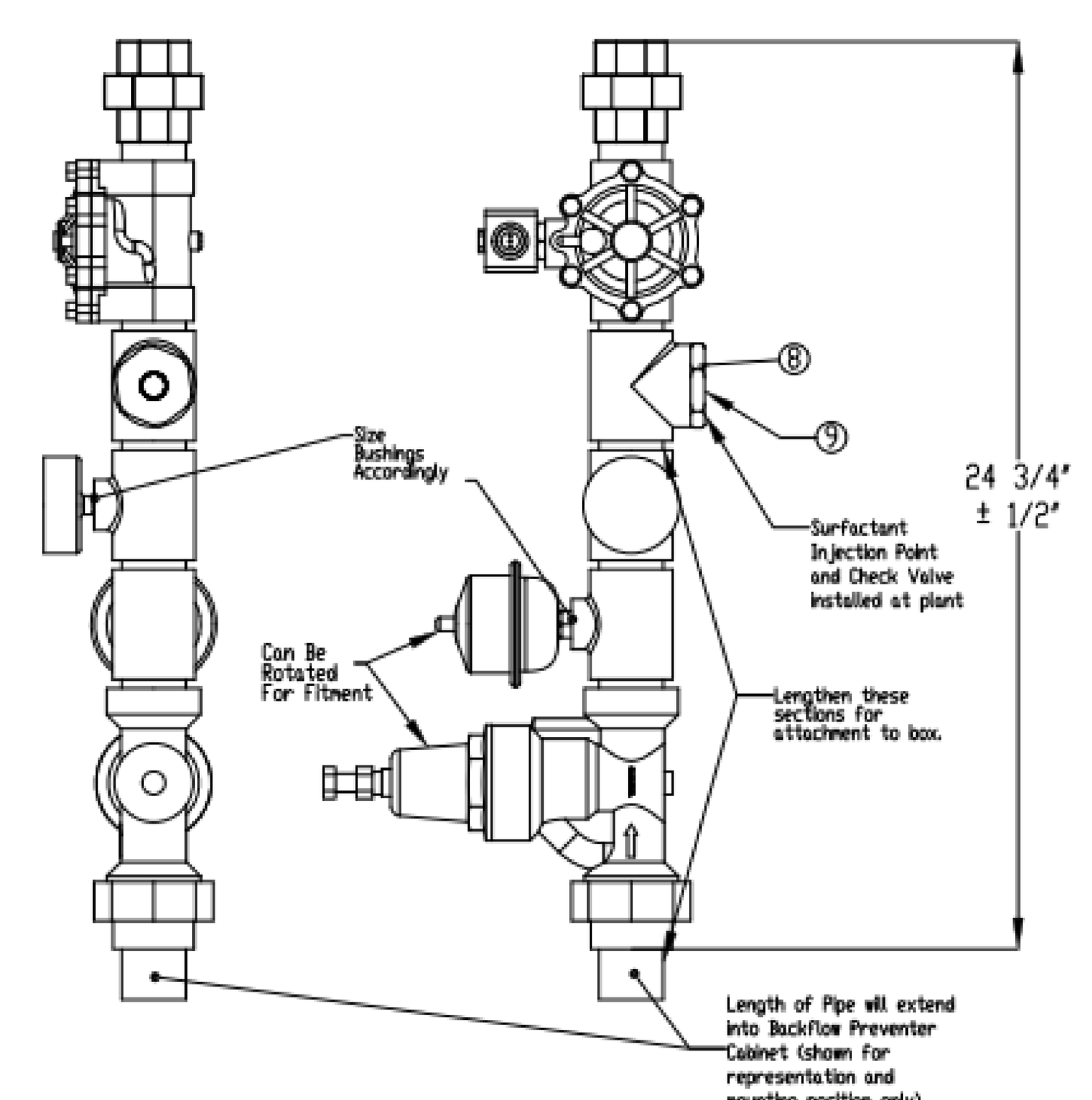


SCS Plumbing	JOB NAME Shake Shack-1398-Korea Town-R3	DATE 6/9/2022
DRAWING NUMBER SCS150H1C0	JOB NUMBER 5505815	MODEL



1	1		
1	1	WWSCTANK2.0	Surfactant Tank
2	1	AQ2539	Surfactant Pump
3	1	SC8221G011	Main Wash Solenoind
4	1	150A	Water Hammer Shock Absorber
5	1	X65BU (1.5)	Pressure Regulator
6	1	AQ5005	30" x 30" 7" Enclosure
7	1	AQ2516	Temperature and Pressure Gauge
8	1	AQ2571	1-1/2" to 1/4" Brass Bushing
9	1	AQ2542	1/4" Surfactant Injection Point

*Ball Valve to be Mounted in the Backflow Preventer Cabinet
*Cold Water Mist solenoid wired to WZ1 of ECPM03 board.
Refer to factory electrical schematics.



Note: Pipe Dope Must Be Used To Seal Threads. DO NOT USE TEFLON TAPE.
All pipe Nipples are Close unless otherwise noted

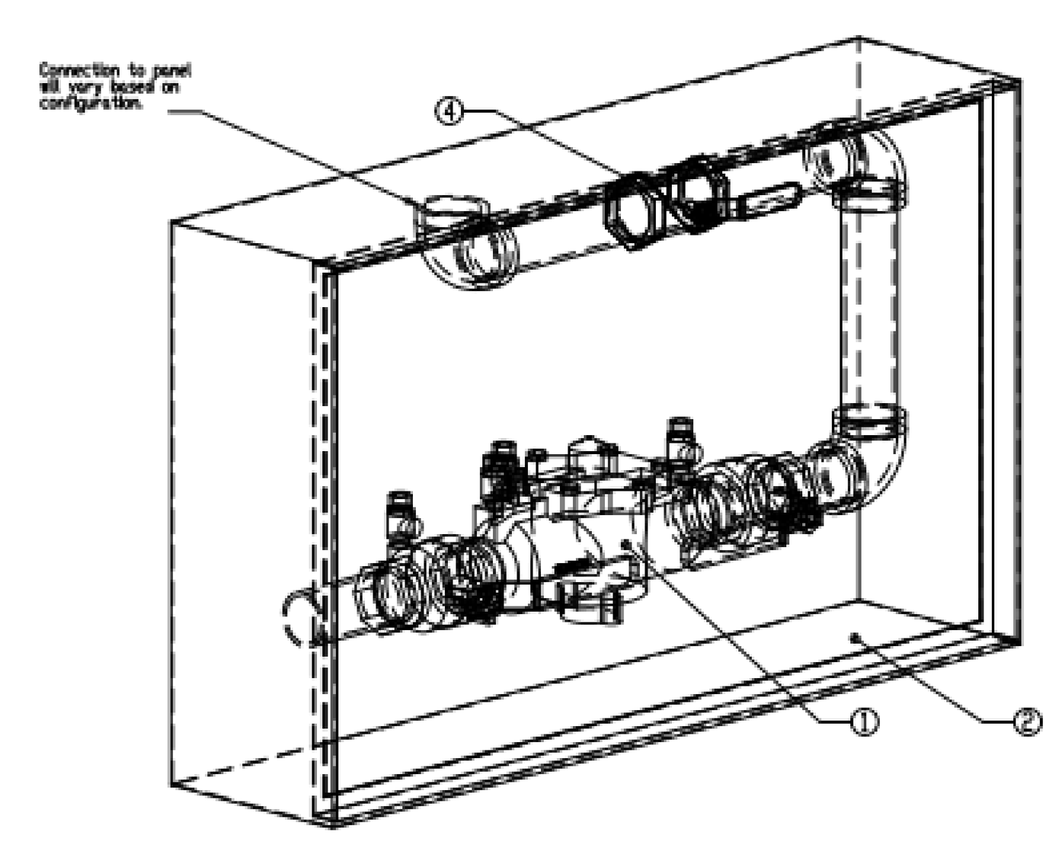
Rev.6 12/15/2019

SCS Plumbing	JOB NAME	DATE
DRAWING NUMBER	JOB NUMBER	MODEL

Backflow preventer is installed below the main Self Cleaning panel and is bolted into place

Cabinet below is used on 1 1/2" manifolds when the panel is 7" deep.
Air Gap Assembly Included.

1	1		
1	1	150 009M3-QT	Reduced Pressure Zone Assembly
2	1	AQ5003	18" X 30" X 7" cabinet
3	1	MBV-1.5NN	Main Water Shutoff Valve
N/A	1	W909AGC	1-1/2" Air Gap Assembly



Note: Pipe Dope Must Be Used To Seal Threads. DO NOT USE TEFLON TAPE.
All pipe Nipples are Close unless otherwise noted

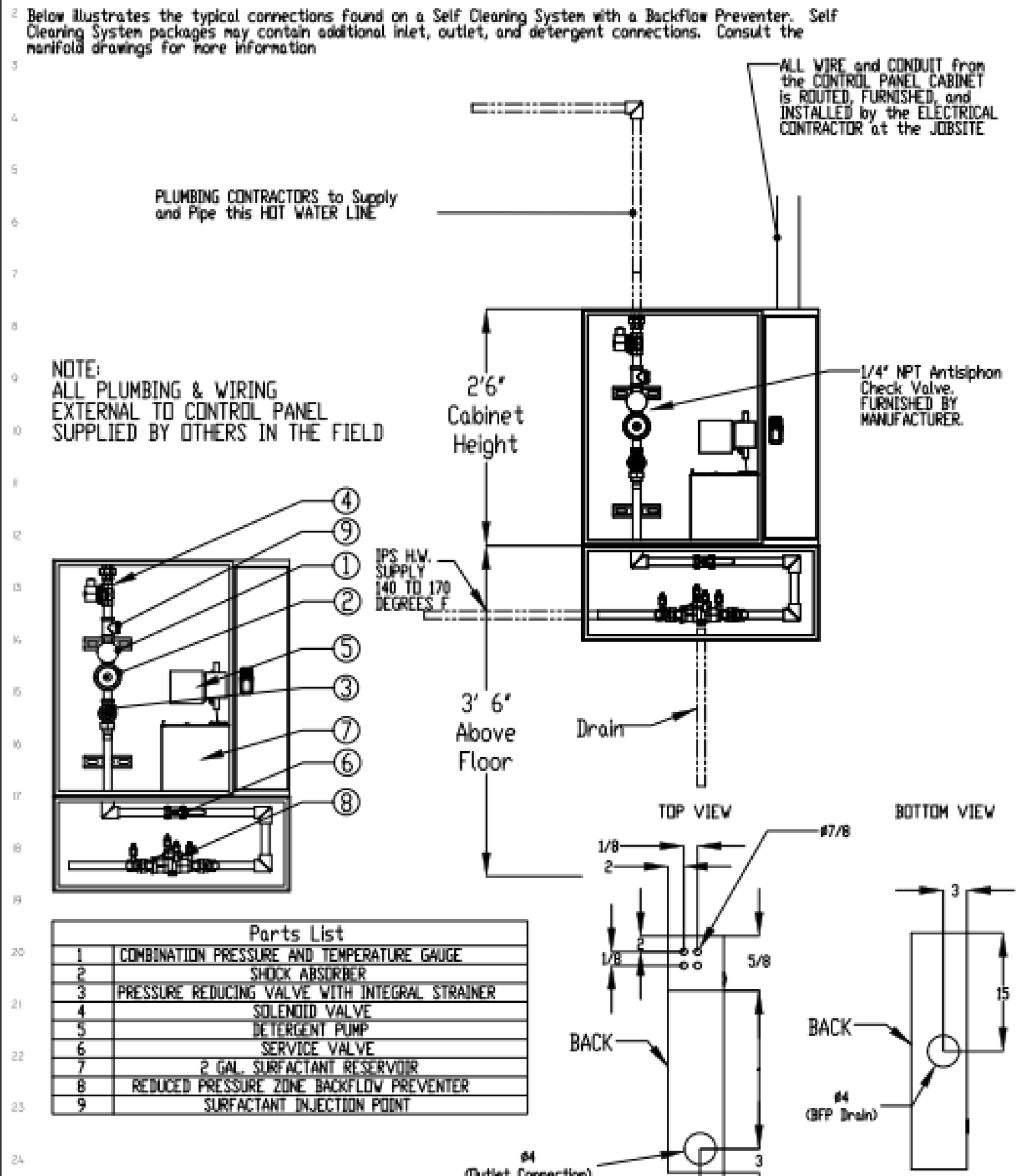
Rev.3 12/14/2017

SCS TYPICAL CONNECTION	JOB NAME Shake Shack-1398-Korea Town-R3	DATE 6/9/2022
DRAWING NUMBER SCS150H1C0	JOB NUMBER 5505815	MODEL

TYPICAL CONNECTION DETAILS FOR SELF CLEANING SYSTEM CONTROL PANELS WITH BACKFLOW PREVENTER

Below illustrates the typical connections found on a Self Cleaning System with a Backflow Preventer. Self Cleaning System packages may contain additional inlet, outlet, and detergent connections. Consult the manifold drawings for more information

NOTE:
ALL PLUMBING & WIRING EXTERNAL TO CONTROL PANEL SUPPLIED BY OTHERS IN THE FIELD



Parts List	
1	COMBINATION PRESSURE AND TEMPERATURE GAUGE
2	SHOCK ABSORBER
3	PRESSURE REDUCING VALVE WITH INTEGRAL STRAINER
4	SOLENOID VALVE
5	DETERGENT PUMP
6	SERVICE VALVE
7	2 GAL SURFACTANT RESERVOIR
8	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
9	SURFACTANT INJECTION POINT

Rev.7 12/15/2019

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DESCRIPTION	DATE

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DATE: 6/9/2022
DWG.#: 5505815
DRAWN BY: EB-108
SCALE: 3/4" = 1'-0"
MASTER DRAWING
SHEET NO. 9

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DATE: 11/08/21	PROJECT NO: SHK-21-008
DRAWN: SK	SCALE: NTS

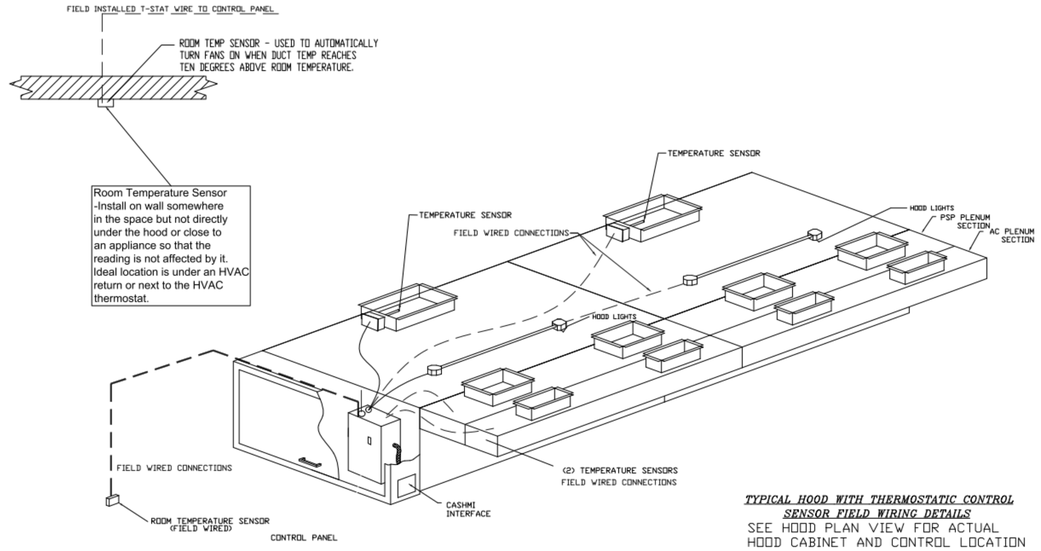
SHEET NO: M809

System Design Verification (SDV)

If ordered, CAS Service will perform a System Design Verification (SDV) once all equipment has had a complete start up per the Operation and Installation Manual. Typically, the SDV will be performed after all inspections are complete.

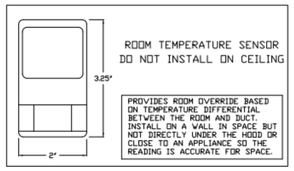
Any field related discrepancies that are discovered during the SDV will be brought to the attention of the general contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office. If CAS Service has to resolve a discrepancy that is a field issue, the general contractor will be notified and billed for the work. Should a return trip be required due to any field related discrepancy that cannot be resolved during the SDV, there will be additional trip charges.

During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer. Should a return trip be required, the general contractor and appropriate sales office will be notified. There will be no additional charges for manufacturer discrepancies.

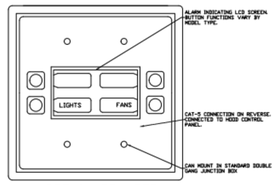


TYPICAL HOOD WITH THERMOSTATIC CONTROL SENSOR FIELD WIRING DETAILS

SEE HOOD PLAN VIEW FOR ACTUAL HOOD CABINET AND CONTROL LOCATION



HOOD CONTROL PACKAGE INTERFACE with LCD Screen



DETAIL OF HOOD MOUNTED CONTROLS INTERFACE

— — — — — — FIELD WIRING
- (4) TEMP SENSORS TO CONTROL PANEL
- REMOTE ROOM SENSOR TO CONTROL PANEL

NOTE: TEMP SENSOR IN HOOD THAT DOES NOT HAVE BUILT IN END CABINET AND ROOM TEMP SENSOR MUST BE FIELD WIRED TO CONTROL PANEL

SC- Specification:

The Electrical Package, typically FP, is designed to thermostatically activate the exhaust fans for an exhaust hood whenever elevated temperatures are sensed in the exhaust system. This option will meet the requirements of IMC 507.2.1.1 by providing a thermostat(s) mounted in the duct or hood riser to sense increased exhaust temperatures.
Controls shall be listed by ETL (UL 508A). The control enclosure shall be NEMA 1 rated and listed for installation inside of the exhaust hood utility cabinet. The control enclosure may be constructed of stainless steel or painted steel.

Temperature probes(s) located in the duct riser shall be constructed of Stainless Steel.
A room temperature sensor is also provided for field installation in the kitchen space in order to start the fan(s) based on the temperature differential between the room and the exhaust air in the duct, rather than fixed set-points.
The system is factory pre-set to activate the fans at 10 deg F° above the room temperature.

Once the duct temperature reaches the activation point, the exhaust fans will be activated. The controls also provide hysteresis to prevent cycling of the fans after the cooking appliances have been turned off and the heat in the exhaust system is reduced. The hysteresis is factory set 2 degrees and will keep the exhaust running until the temperature falls 2 degrees below the activation set point. A hysteresis timer also exists to keep the fans running for at least 30 min after being activated by the temperature rise.

The activation and hysteresis settings may be field adjusted on the board LCD interface located inside the control enclosure to meet application needs.
The panel is factory configured to shut down supply fans, turn on the exhaust fans and turn off the hood lights in a fire condition.

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DRAWN BY: EB-108

SCALE: 3/4" = 1'-0"

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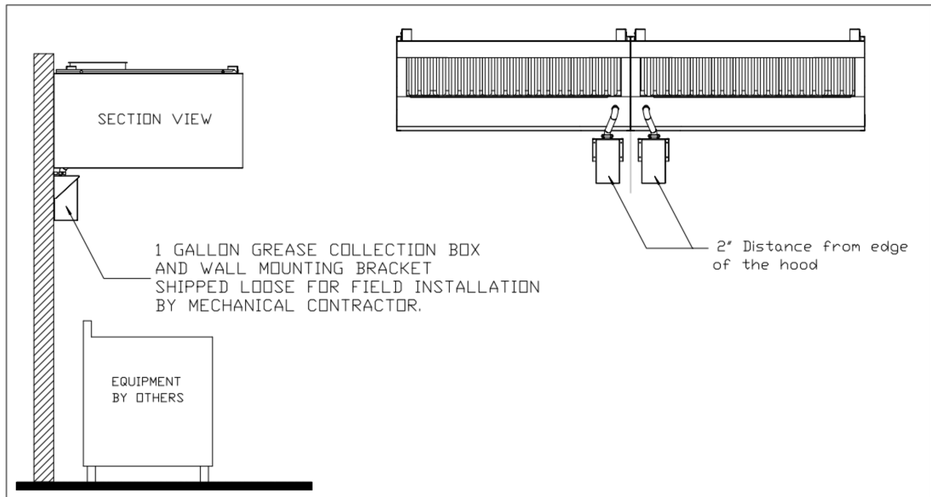
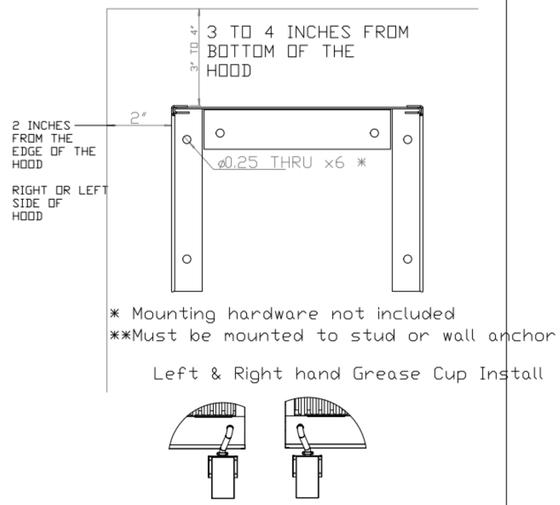
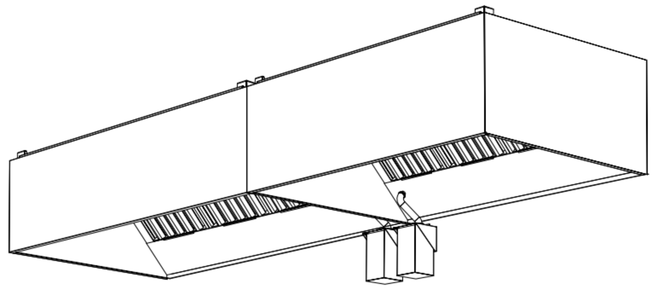
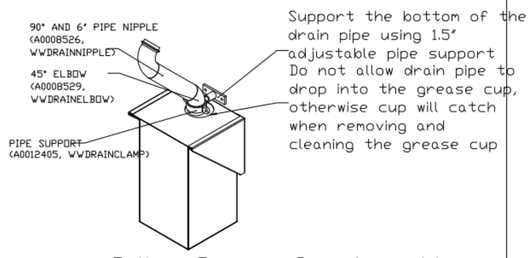
SHEET NO: **M810**



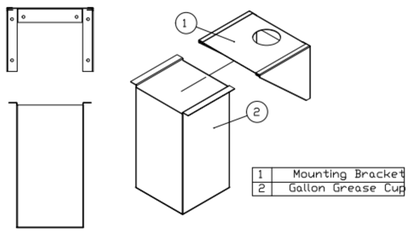




One Gallon Grease Cup Installation



Gallon Grease Cup Assembly



1	Mounting Bracket
2	Gallon Grease Cup

Instructions below outline single, or dual, one gallon grease cup installation for ND-2 hood models.

The one gallon grease cup comes as an assembly of stainless steel wall mounting bracket and one gallon cup. The mounting bracket should be installed 2" from the edge of the containment plenum and 3"-4" below the bottom of the hood.

Piping from the hood grease drain should route to the opening of the grease cup, but not into the cup, otherwise the cup will not be able to be removed and emptied.

1 GALLON GREASE COLLECTION BOX
AND WALL MOUNTING BRACKET
SHIPPED LOOSE FOR FIELD INSTALLATION
BY MECHANICAL CONTRACTOR.

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DRAWN BY: EB-108

SCALE: 3/4" = 1'-0"

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06/29/22	SHK-21-008
DRAWN: Author	SCALE: 12" = 1'-0"

SHEET NO: **M811**