

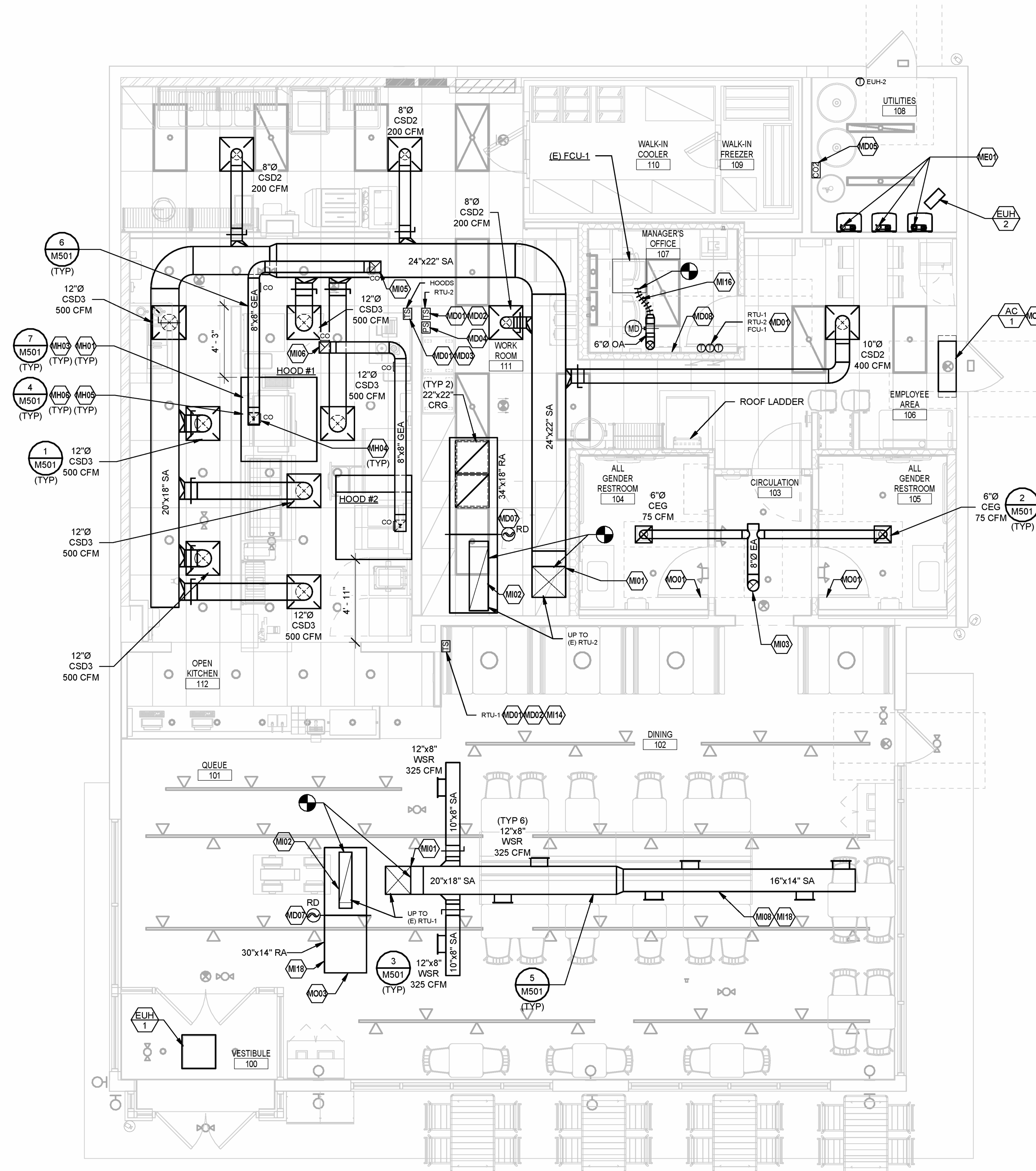


**MECHANICAL GENERAL NOTES:**

- DO NOT ROUTE ANY DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS.
- REFER TO SHEET M001 FOR ADDITIONAL GENERAL NOTES AND REQUIREMENTS.
- REFER TO DETAILS AND SCHEDULES SHEETS FOR FURTHER INFORMATION.
- MOUNT ALL THERMOSTATS AND SENSORS CONTROLLING HVAC EQUIPMENT AT 48" AFF UNLESS OTHERWISE NOTED.

**MECHANICAL PLAN NOTES:**

- MD01 MOUNT THERMOSTATS, HUMIDITY SENSORS, AND TEMPERATURE SENSORS ON WALL. THERMOSTATS AND SENSOR(S) SHALL BE LABELED TO MATCH THE UNIT TAG AND CORRESPOND TO THE ELECTRICAL LEGEND IN THE ELECTRICAL PANELBOARD SERVING THE EQUIPMENT. COORDINATE COLOR WITH ARCHITECT.
- MD02 COMBINATION TEMPERATURE SENSOR AND HUMIDITY SENSOR.
- MD03 MOUNT TEMPERATURE SENSOR PROVIDED WITH KITCHEN EXHAUST HOODS ON WALL.
- MD04 INSTALL HOOD FIRE SUPPRESSION MANUAL PULL STATION. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH FIRE SUPPRESSION SYSTEM INSTALLER AND THE AUTHORITY HAVING JURISDICTION.
- MD05 CARBON DIOXIDE SENSOR WITH REMOTE ALARM REPEATER FURNISHED BY OWNER'S CO2 VENDOR AND LOCATED AT 12' AFF. THE SENSOR SHALL BE EQUIPPED WITH A LOCAL AUDIBLE AND VISUAL ALARM. THE LOW-LEVEL ALARM SHALL ACTIVATE THE LOCAL AUDIBLE AND VISUAL ALARM. IF THE BUILDING HAS A FIRE ALARM, PROVIDE THE APPROPRIATE FIRE ALARM INTERFACE MODULE TO INTERLOCK WITH THE BUILDING FIRE ALARM SYSTEM. THE HIGH-LEVEL CO2 ALARM SHALL SIGNAL BUILDING FIRE ALARM WHEN EQUIPPED.  
LOW LEVEL ALARM - 0.5% = 5,000 PPM  
HIGH LEVEL ALARM - 3.0% = 30,000 PPM
- MD07 INSTALL DUCT SMOKE DETECTOR IN RETURN AIR PLENUM.
- MD08 INSTALL EMERGENCY ALARM IN MANAGER'S OFFICE TO INDICATE CARBON MONOXIDE AND CARBON DIOXIDE DETECTION IN MECHANICAL ROOM. PROVIDE LIGHT IN OFFICE WITH TAG FOR EACH ALARM.
- ME01 PROVIDE COMBUSTION AIR AND EXHAUST PIPE AND ROUTE TO CONCENTRIC VENT THROUGH ROOF.
- MH01 TYPE I GREASE HOOD EXHAUST DUCTWORK SHALL BE MINIMUM 16 GAUGE STEEL OR MINIMUM 18 GAUGE STAINLESS STEEL WITH LIQUID TIGHT WELDS.
- MH03 INSTALL ACCESS PANELS FOR CLEANING AS REQUIRED BY NFPA 96 AND LOCAL CODES. TRANSITION GREASE DUCTWORK AS REQUIRED TO HOOD AND FAN CONNECTIONS. PROVIDE 45° MAX OFFSETS TO HOOD AND FAN CONNECTIONS. PROVIDE 45° STRUCTURE. PROVIDE RADIUS ELBOWS WITHOUT TURNING VANES. SLOPE HORIZONTAL GREASE DUCT BACK TOWARDS HOOD AT MINIMUM OF 1/4" PER LINEAL FOOT. GREASE DUCTS SHALL BE CONTAINED IN A UL APPROVED GREASE DUCT WRAP SYSTEM.
- MH04 INSTALL DUCTMATE ULTIMATE DOOR® ON DUCTS 12" OR LARGER AND INSTALL DUCTMATE F2 SANDWICH ACCESS DOOR® FOR DUCTS LESS THAN 12" ON GREASE DUCT FOR CLEANING IN LOCATION SHOWN AT A MINIMUM AND AS REQUIRED BY NFPA 96 AND LOCAL CODES.
- MH05 TYPE I HOODS SHALL BE FURNISHED COMPLETE WITH INTERNALLY PIPED FIRE SUPPRESSION SYSTEM AND EXTERNAL FOAM SUPPLY BOTTLES WITH REMOTE PULL CONTROLS AND IN COMPLIANCE WITH NFPA 96, DIVISION 23 SHALL COORDINATE COMPLETE INSTALLATION WITH FIRE PROTECTION CONTRACTOR TO MEET APPROVAL OF LOCAL INSPECTOR AND CODE COMPLIANCE INCLUDING TESTING.
- MH06 HOOD SHALL OVERHANG THE COOKING SURFACE BY AT LEAST 6" ON BOTH SIDES.
- M101 CONNECT NEW SA DUCT TO EXISTING LANDLORD PROVIDED SA DUCT STUBBED THROUGH ROOF.
- M102 CONNECT NEW RA DUCT TO EXISTING LANDLORD PROVIDED RA DUCT STUBBED THROUGH ROOF.
- M103 PROVIDE EA DUCT THROUGH ROOF, FULL SIZE OF UNIT OPENING, AND CONNECT TO UNIT WITH FLEXIBLE CONNECTOR. TRANSITION 45 DEGREES THROUGH ROOF CURB.
- M105 8"X8" GREASE EXHAUST DUCT UP TO KEF-1 ON ROOF.
- M108 ROUTE DUCTWORK LEVEL, TIGHT TO STRUCTURE, AND ABOVE LIGHTS. COORDINATE WITH STORM DRAINAGE, STRUCTURAL, AND ELECTRICAL.
- M14 TEMPERATURE SENSOR TO BE INSTALLED 48" A.F.F. COORDINATE TO ENSURE TOP OF BOOTH DOES NOT CONFLICT WITH SENSOR LOCATION.
- M16 TRANSITION 6" OUTDOOR AIR DUCT TO 4" FLEXIBLE DUCTWORK AND CONNECT TO UNIT.
- M18 MOUNT SUPPLY AIR DUCTWORK LOWER THAN RETURN AIR DUCTWORK TO ENSURE AIR FLOW FROM DUCT MOUNTED SUPPLY REGISTERS IS UNIMPEDED.
- MO01 CONTRACTOR TO COORDINATE 1" UNDERCUT ON DOOR FOR EXHAUST AIR PATH.
- MO02 AIR CURTAIN MOUNTED ABOVE DOOR. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
- MO03 PROVIDE 1/4" GALVANIZED CONSTRUCTION HARDWARE CLOTH SCREEN OVER OPEN END OF RETURN DUCT. PROVIDE DUCT LINER IN BOOT. RETURN AIR DUCT SHALL BE MINIMUM 36" HORIZONTAL EXTENSION FOR SOUND ATTENUATION.



**MECHANICAL FLOOR PLAN**  
1/4" = 1'-0"

ALL GREASE DUCT TO BE WATER TESTED BY ENVIROMATIC AT MECHANICAL CONTRACTOR'S EXPENSE. CONTACT OWNER'S NATIONAL ACCOUNT VENDOR:  
**ENVIROMATIC**  
DON PFELEDER  
1 800 224 8476  
inspections@enviromatic.com

THE BUILDINGS HVAC SYSTEMS SHALL BE BALANCED BY NATIONAL TAB (NO EXCEPTIONS) AND CONTRACTED BY THE GENERAL CONTRACTOR.  
**CONTACT:**  
WILL TURNBOUGH  
will@natontab.com  
855-682-6822 ext704

**NOTE:** EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS & SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.  
**NEW YORK ALTERATION WARNING STATEMENT:** IT IS A VIOLATION OF THE NEW YORK EDUCATION LAW ARTICLE 146, SECTION 7209 FOR ANY PERSON, UNLESS THE INDIVIDUAL IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER AN ITEM IN ANY WAY IF AN ITEM BEARING THE SEAL OF AN ENGINEER IS ALTERED. THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM THEIR SEAL AND THE NOTATION ALTERED BY FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

**TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2022 NEW YORK STATE ENERGY CODE.**  
**SPECIAL INSPECTIONS:** OWNER SHALL SUBCONTRACT WITH A NEW YORK STATE REGISTERED SPECIAL INSPECTION AGENCY TO PERFORM THE REQUIRED SPECIAL INSPECTIONS FOR THE MECHANICAL, PLUMBING AND FIRE PROTECTION SYSTEMS AS REQUIRED BY THE NEW YORK CITY BUILDING CODE. OWNER SHALL PAY AN EXPEDITER TO FILE ALL REQUIRED FORMS.  
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**Bergmeyer**  
CONSULTANTS  
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HNY	2024-11-19	Permit Set	
HNY	2024-10-21	75% SET	



SHAKE SHACK GREECE

2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623

IFC SET

MECHANICAL FLOOR PLAN

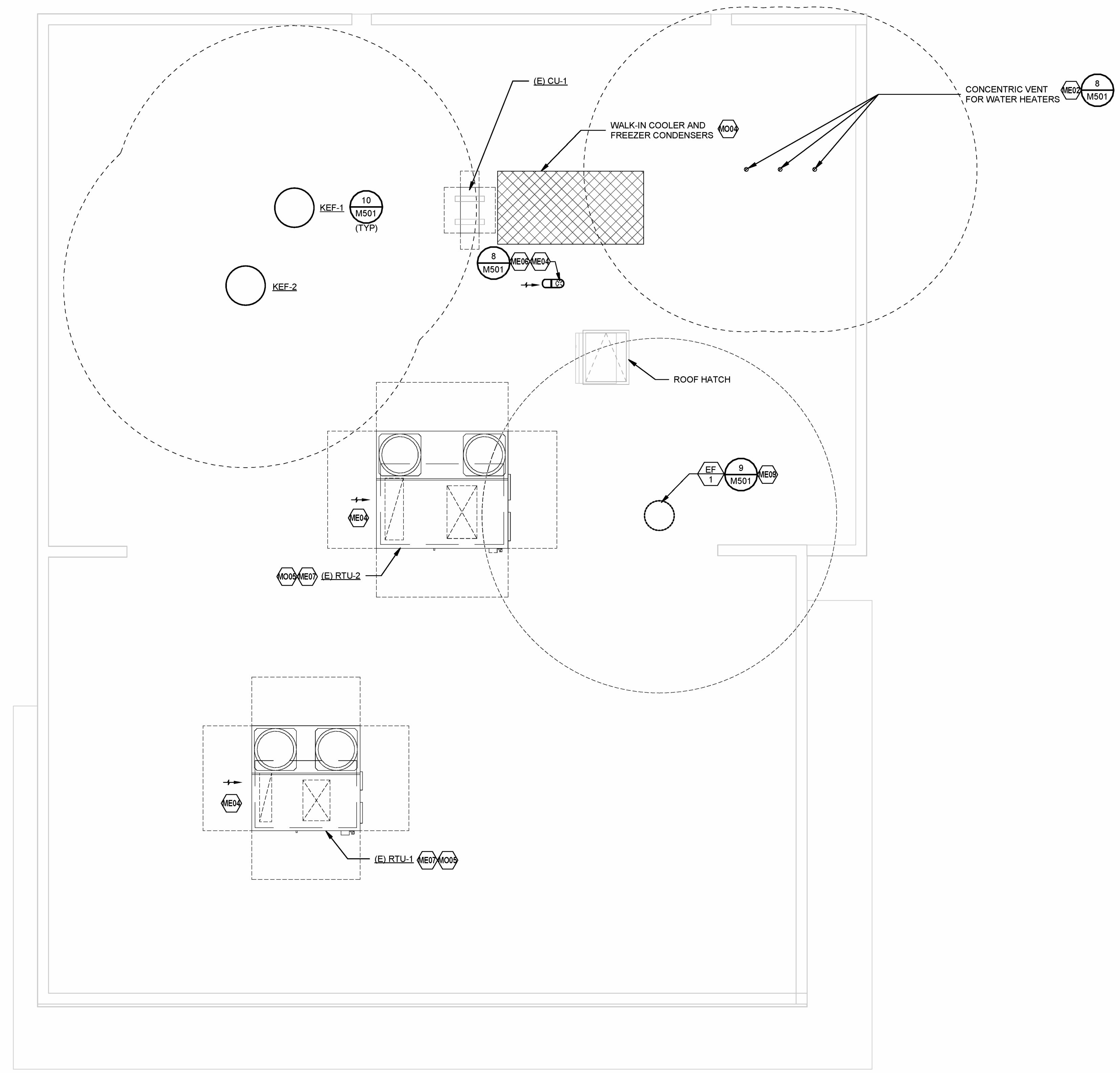
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CHECKED BY: JH

JOB NO: 20240158.00

**M101**

- MECHANICAL PLAN NOTES:**
- ME02 PROVIDE CONCENTRIC VENT MODEL NUMBER PVC-3CT.
  - ME04 MAINTAIN ALL OUTSIDE AIR INTAKES A MINIMUM OF 10'-0" RADIUS FROM EXHAUST, TYPICAL.
  - ME06 TURN DOWN 6" Ø INTAKE AND END OPEN OVER ROOF (MIN. 24") WITH INSECT SCREEN.
  - ME07 CONTRACTOR SHALL COORDINATE WITH NATIONAL TAB TO PROVIDE UV-PHI INDOOR AIR PURIFICATION SYSTEM, MODEL PHI-PKG-24V, INSTALL IN UNIT BLOWER COMPARTMENT PER MANUFACTURER'S INSTRUCTIONS.
  - ME09 AREA RESERVED FOR REFRIGERATION CONDENSER(S) PROVIDED BY KITCHEN EQUIPMENT CONTRACTOR. COORDINATE EQUIPMENT LOCATION AND CONDENSER INSTALLATION WITH KITCHEN EQUIPMENT CONTRACTOR.
  - MO05 REFERENCE PLUMBING DRAWINGS FOR CONDENSATE DRAIN ROUTING AND TERMINATION REQUIREMENTS.



1 MECHANICAL ROOF PLAN  
1/4" = 1'-0"

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JOSHUA N. HOVER

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Boston, MA 02210  
617.542.1025

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SEAL SIGNATURE:

STATE OF NEW YORK  
JOSHUA N. HOVER  
LICENSED PROFESSIONAL ENGINEER

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MECHANICAL ROOF PLAN

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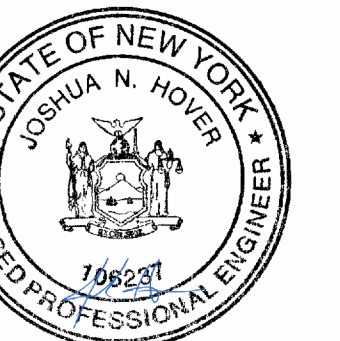
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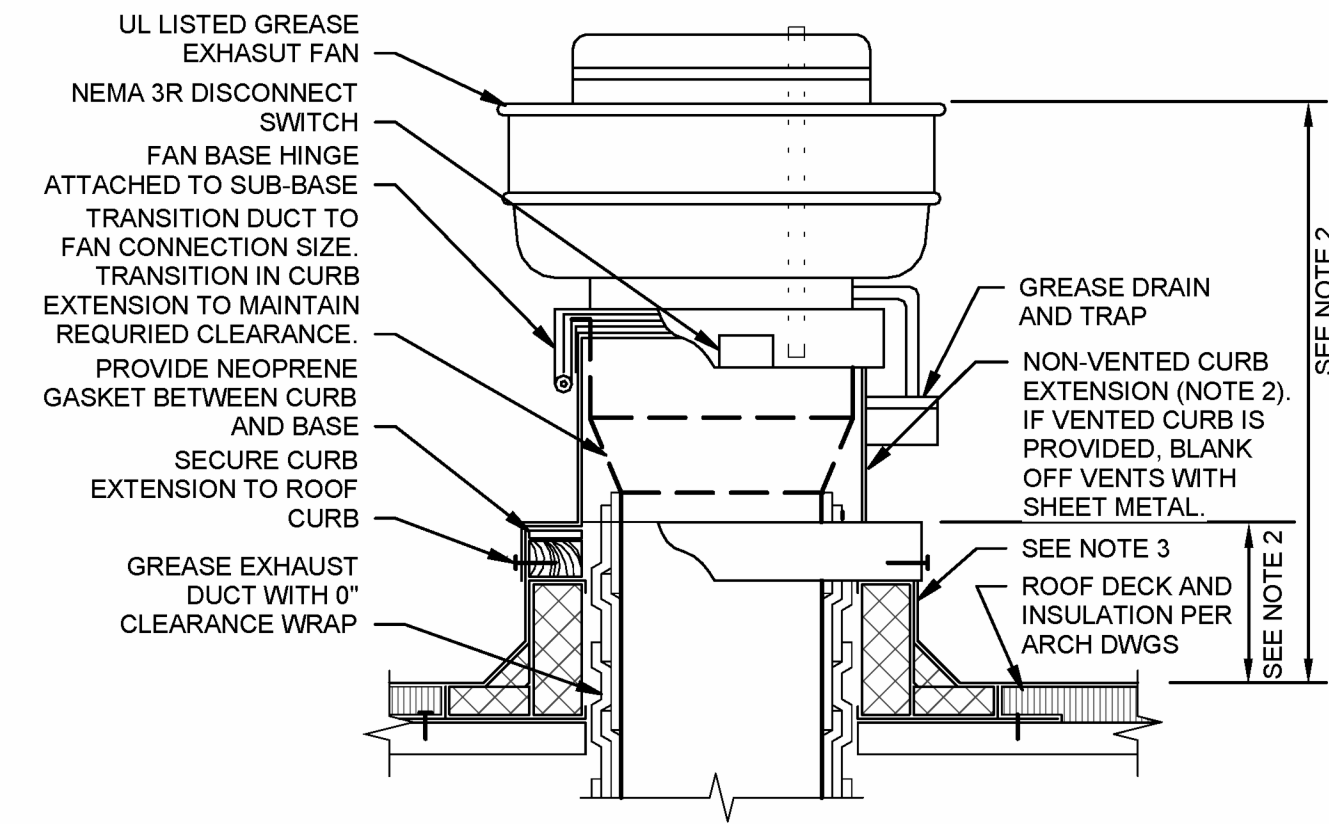


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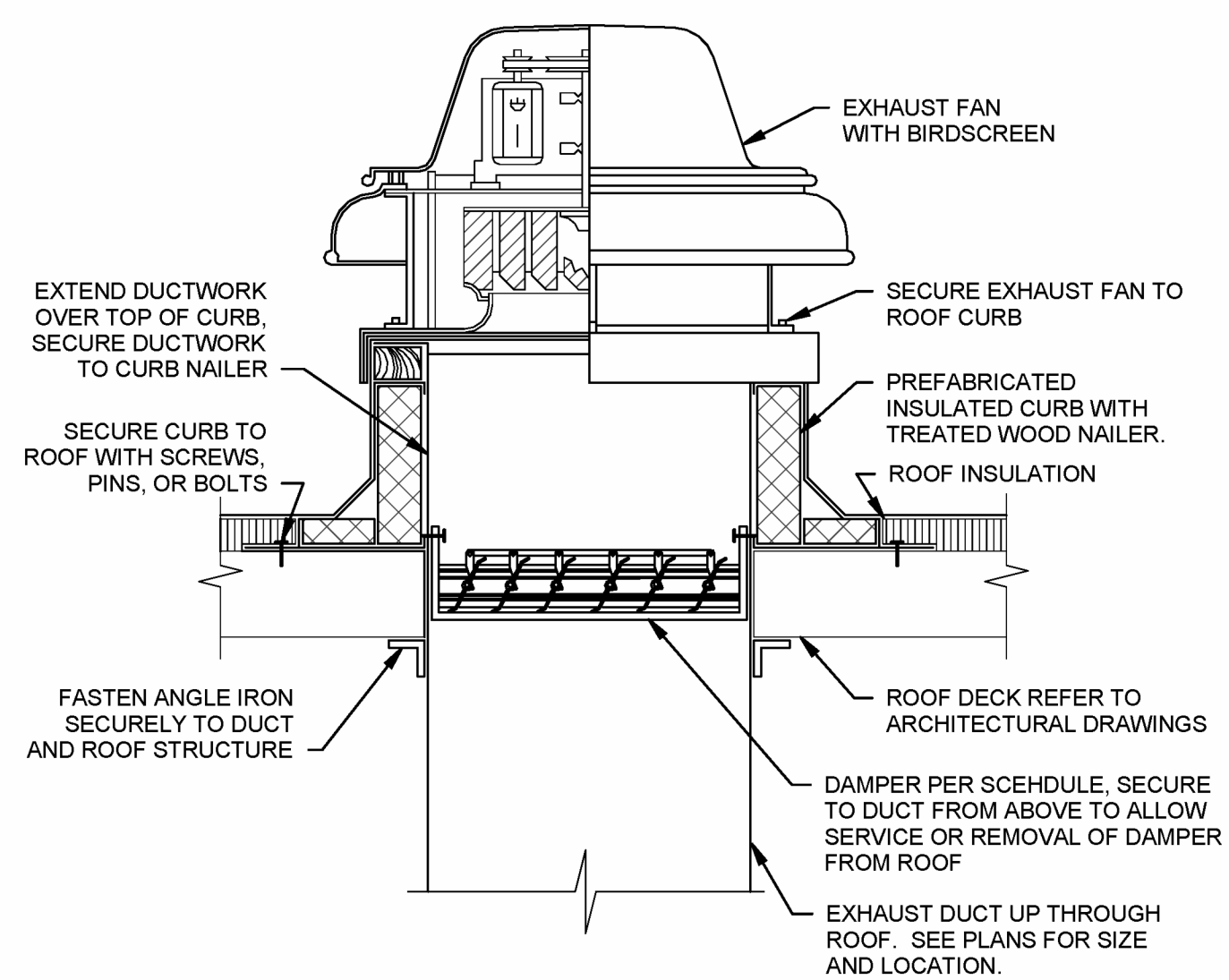


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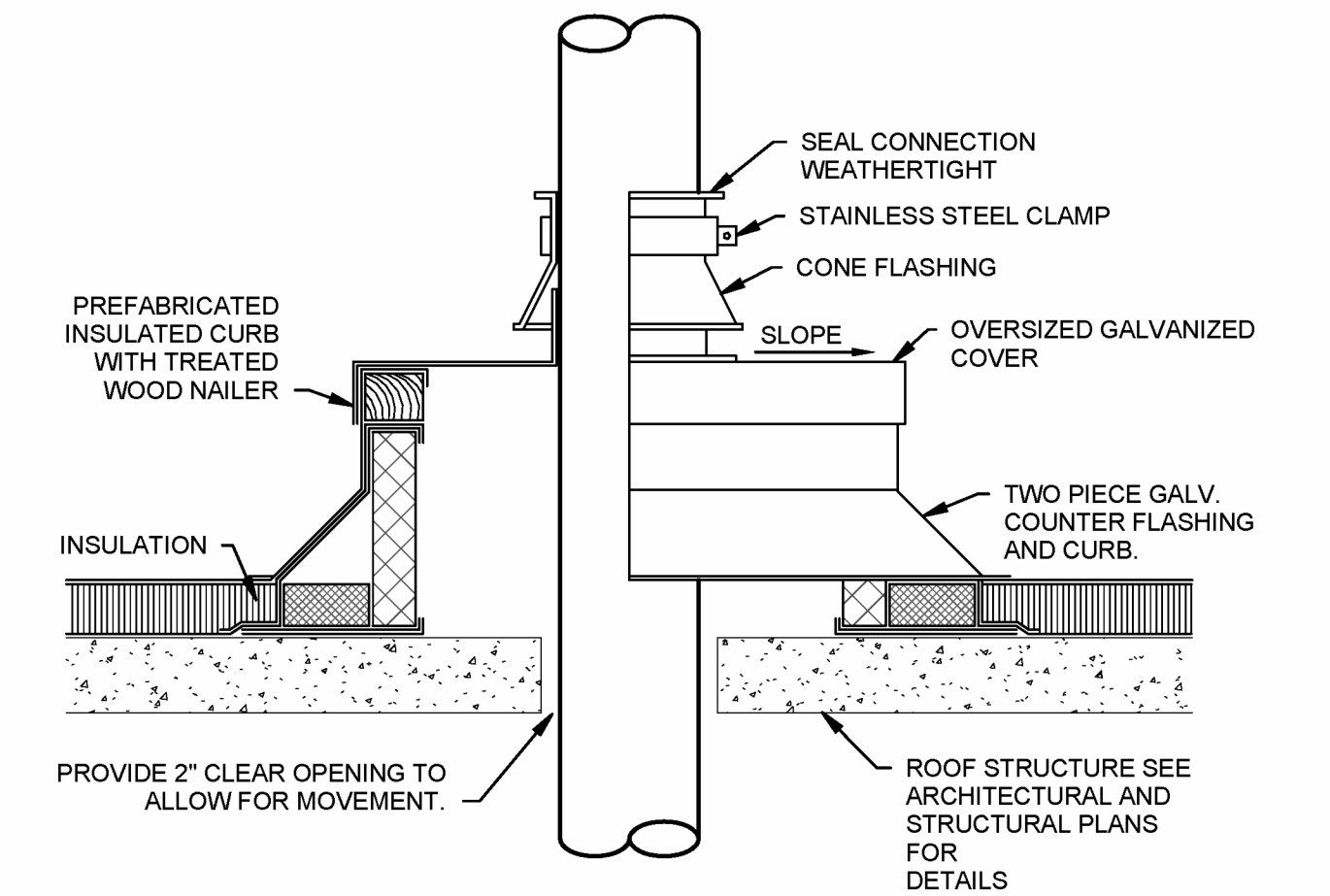


NOTES:  
 1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.  
 2. PROVIDE CURB EXTENSION MADE FROM NON-COMBUSTIBLE MATERIAL OF HEIGHT REQUIRED TO MOUNT FAN BASE A MINIMUM 18 INCHES ABOVE COMBUSTIBLE CURB MATERIAL AND DISCHARGE GREASE OUTLET A MINIMUM OF 40 INCHES ABOVE ROOF SURFACE OR ANY ADJACENT BUILDING STRUCTURE WITHIN 10 FEET OF OUTLET, WHICHEVER IS HIGHER.  
 3. PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION, FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURBS SHALL BEAR ON ROOF STRUCTURE. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.  
 HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

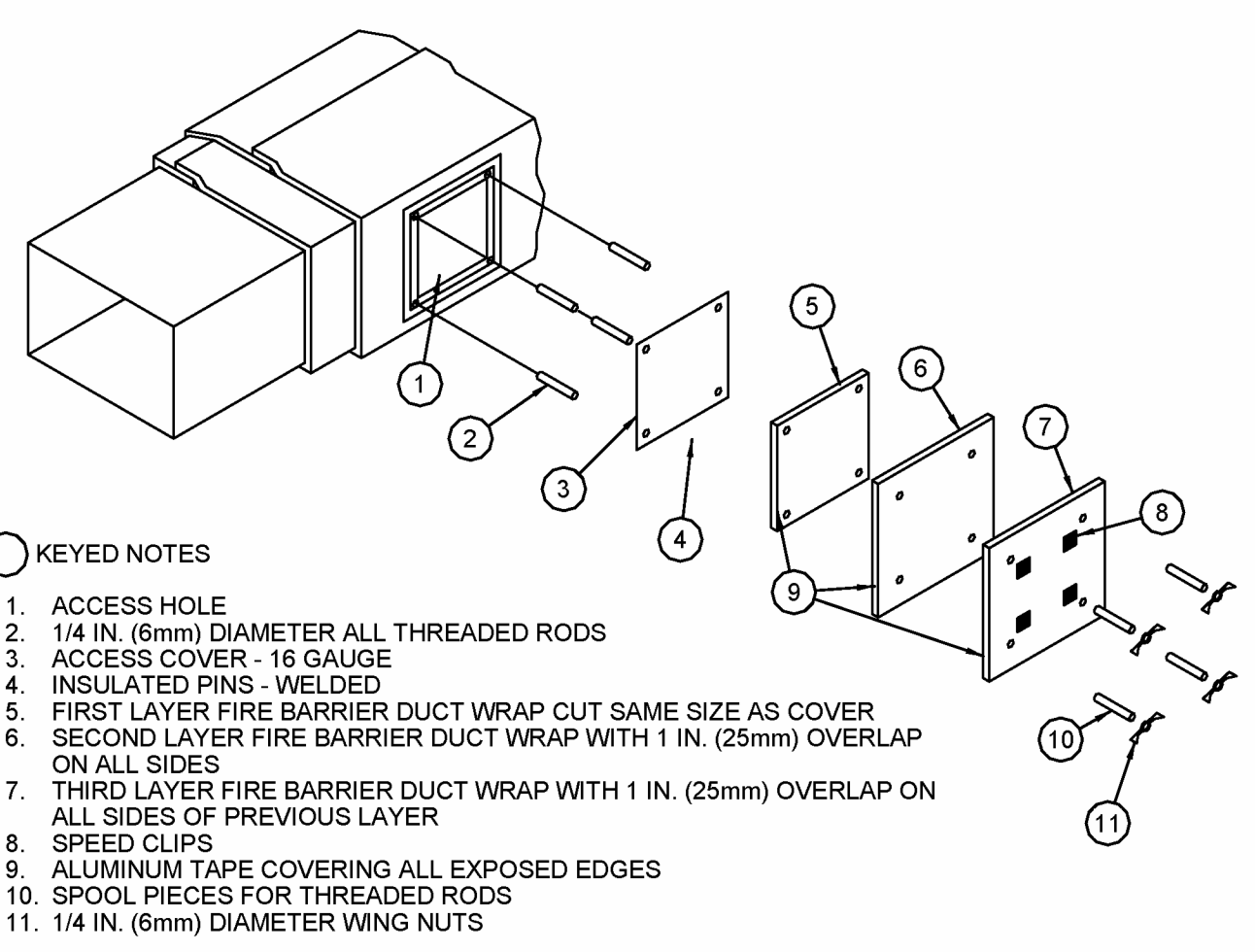
10 UPBLAST GREASE EXHAUST FAN DETAIL NTS



9 DOWNBLAST EXHAUST FAN DETAIL NTS

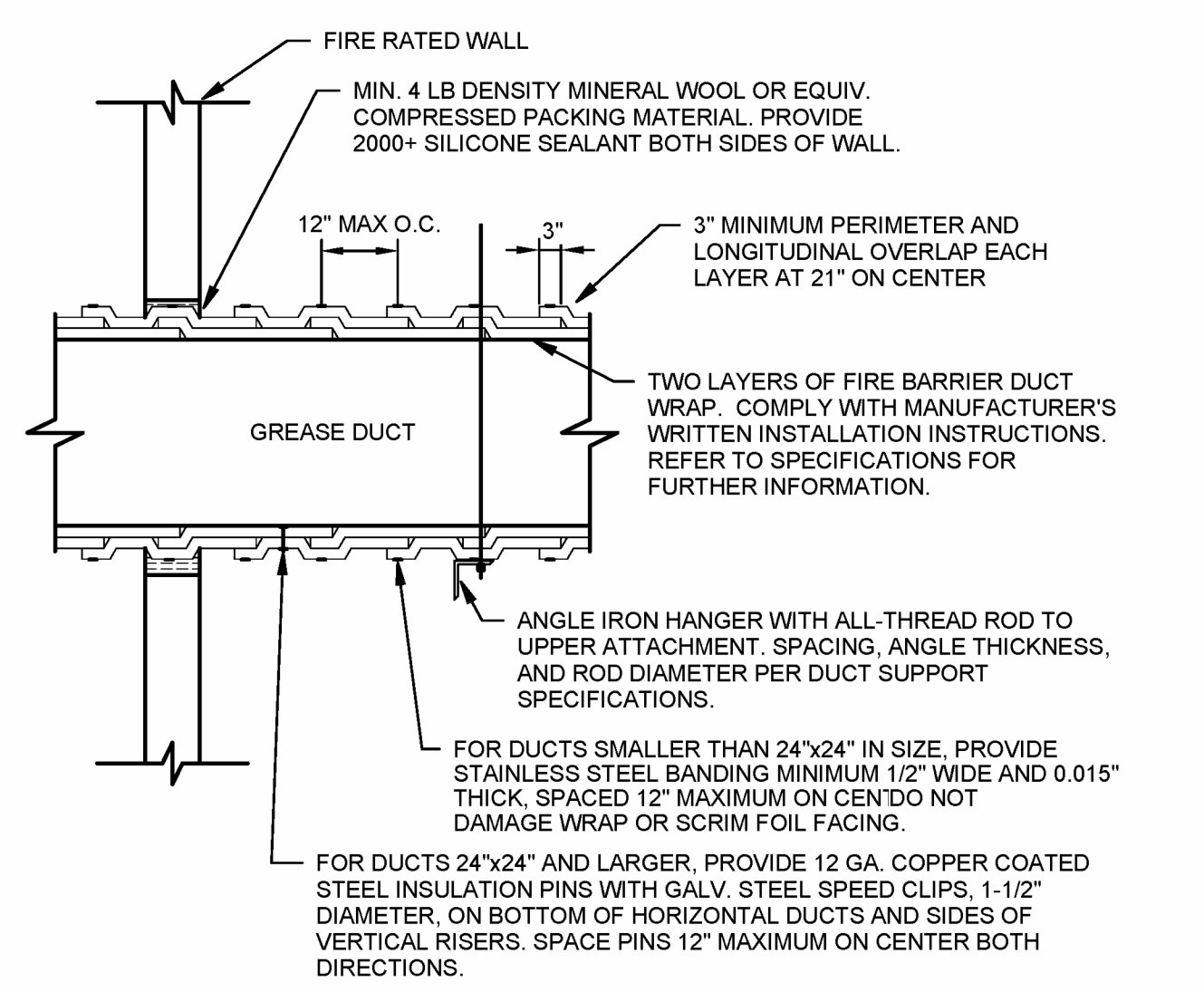


8 ROUND AIR DUCT OR PIPE PENETRATION THROUGH ROOF DETAIL NTS



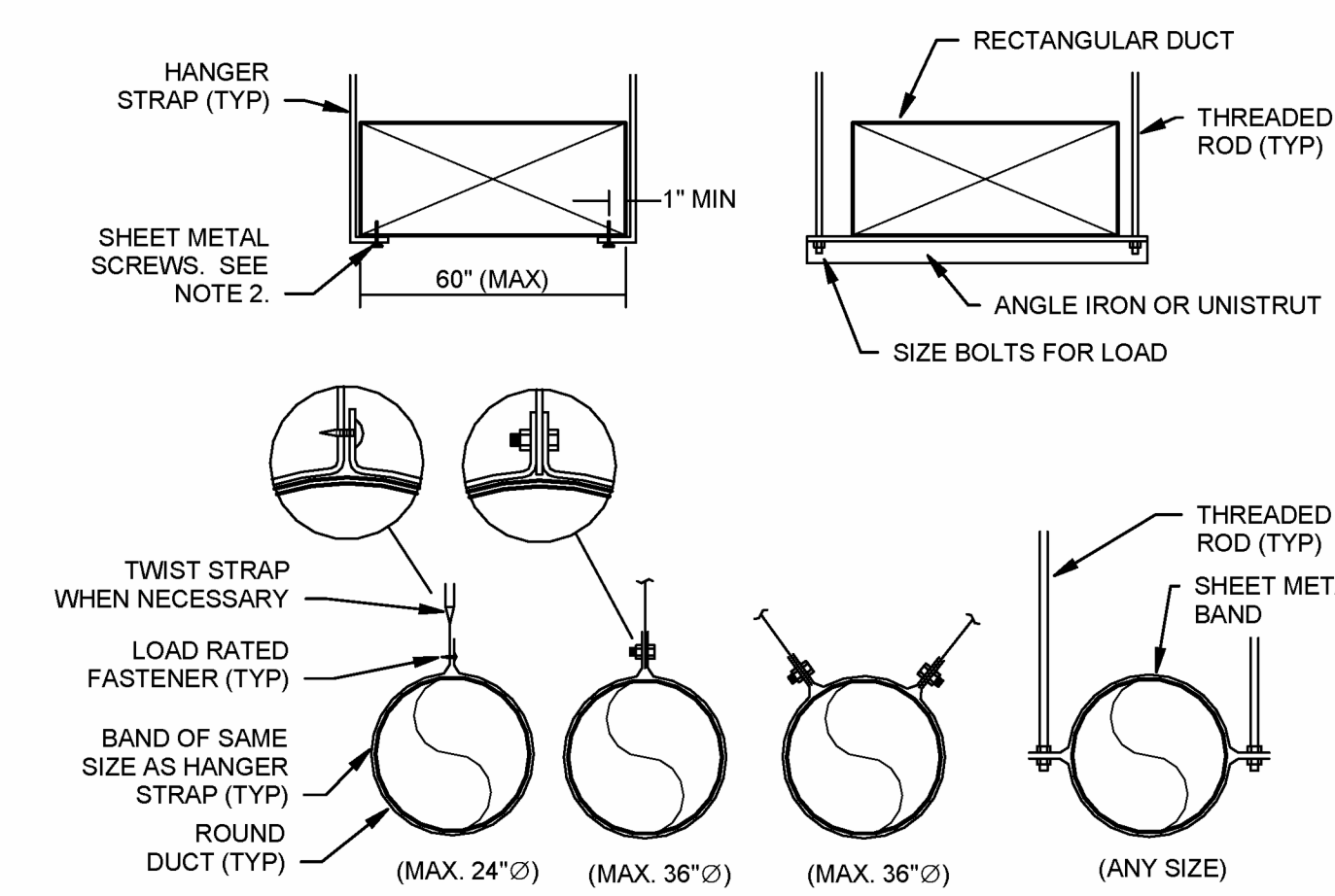
KEYED NOTES:  
 1. ACCESS HOLE  
 2. 1/4 IN. (6mm) DIAMETER ALL THREADED RODS  
 3. ACCESS COVER - 16 GAUGE  
 4. INSULATED PINS - WELDED  
 5. FIRST LAYER FIRE BARRIER DUCT WRAP CUT SAME SIZE AS COVER  
 6. SECOND LAYER FIRE BARRIER DUCT WRAP WITH 1 IN. (25mm) OVERLAP ON ALL SIDES  
 7. THIRD LAYER FIRE BARRIER DUCT WRAP WITH 1 IN. (25mm) OVERLAP ON ALL SIDES OF PREVIOUS LAYER  
 8. SPEED CLIPS  
 9. ALUMINUM TAPE COVERING ALL EXPOSED EDGES  
 10. SPOOL PIECES FOR THREADED RODS  
 11. 1/4 IN. (6mm) DIAMETER WING NUTS

7 GREASE DUCT CLEANOUT ACCESS DOOR DETAIL NTS



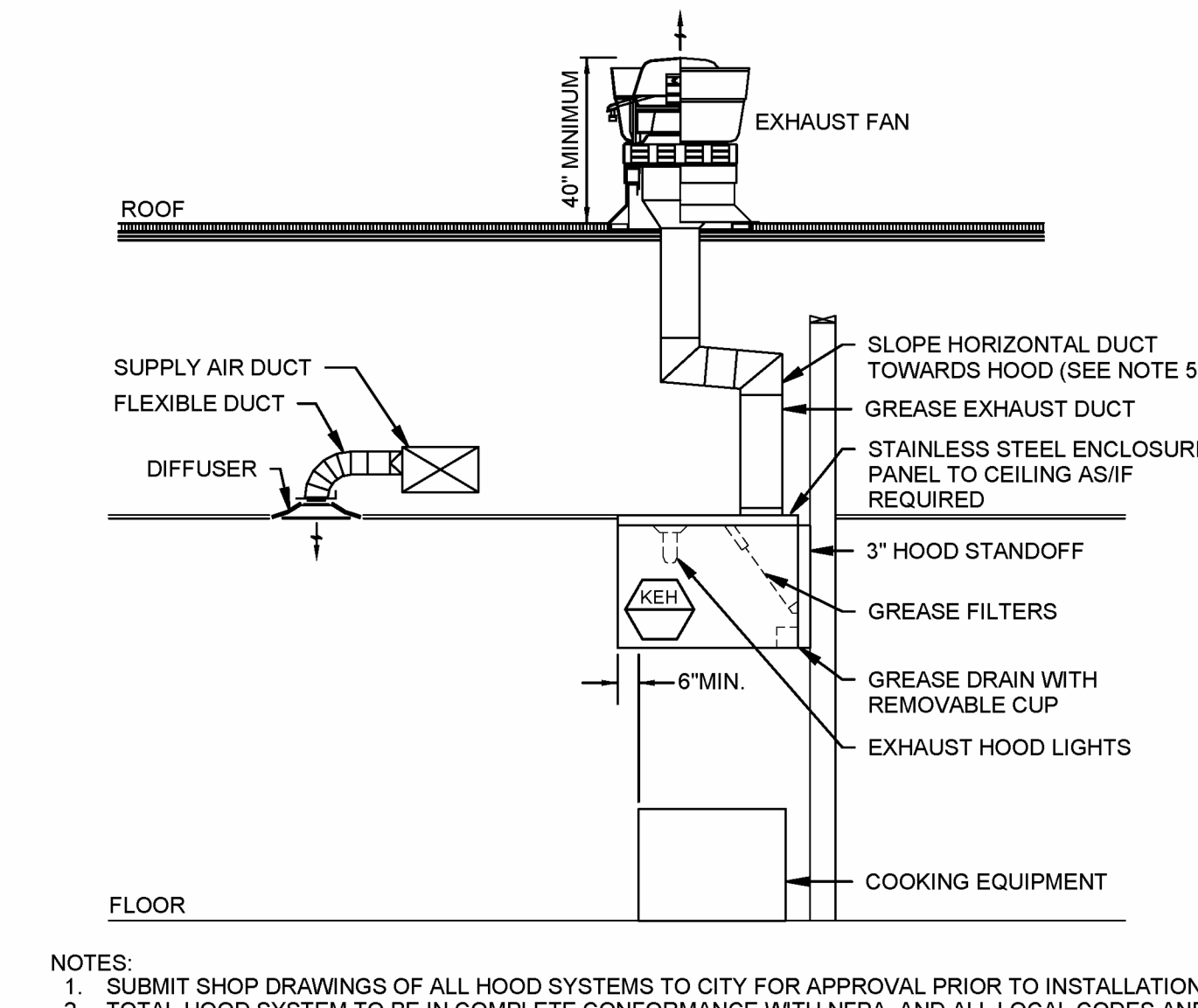
NOTES:  
 1. INSTALL GREASE EXHAUST AND FIRE RATED DUCT WRAP IN ACCORDANCE WITH THE MANUFACTURER'S APPROVED INSTRUCTIONS AND UL LISTED INSTALLATION DETAILS. TECHNIQUES THAT DIFFER FROM THE ABOVE METHOD ARE ACCEPTABLE IF THEY ARE UL TESTED AND APPROVED.

6 GREASE DUCT FIRE WRAP INSULATION INSTALLATION DETAIL NTS



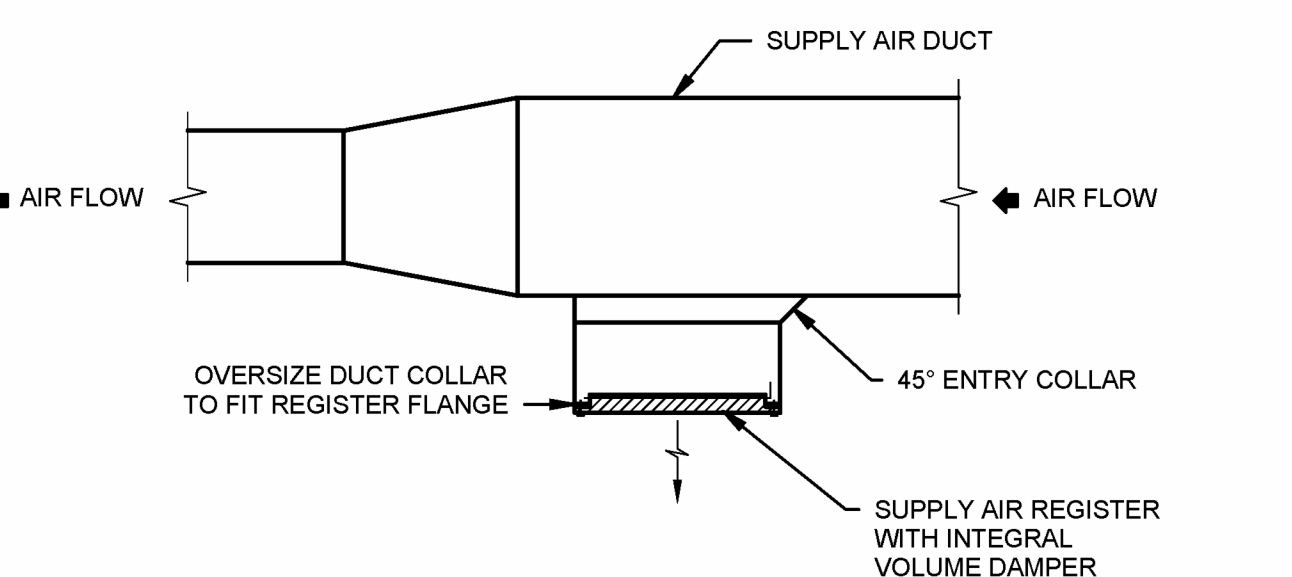
NOTES:  
 1. USE THREADED ROD FOR RECTANGULAR DUCTS LARGER THAN 60\"/>

5 DUCT HANGER LOWER ATTACHMENT DETAILS NTS

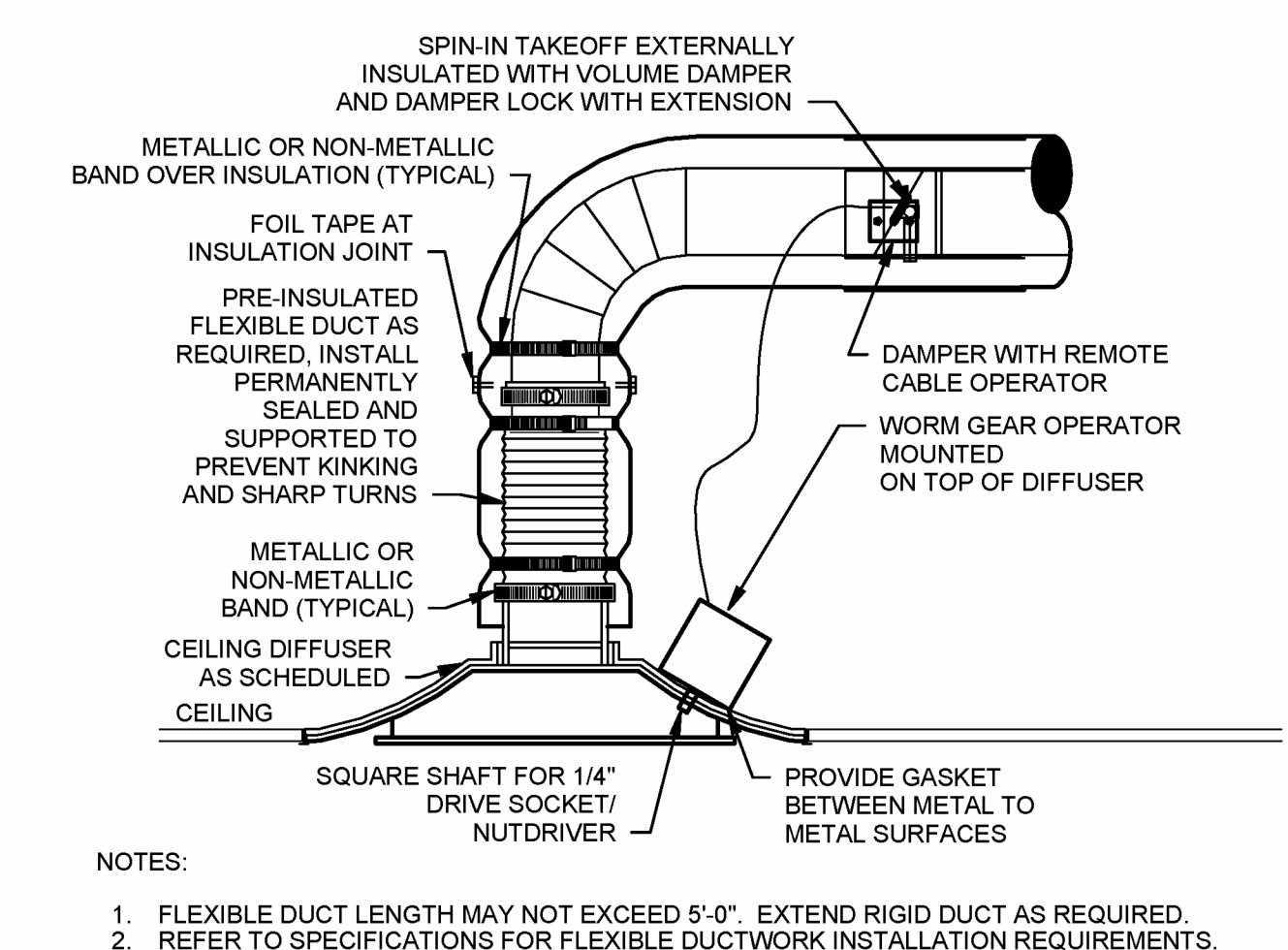


NOTES:  
 1. SUBMIT SHOP DRAWINGS OF ALL HOOD SYSTEMS TO CITY FOR APPROVAL PRIOR TO INSTALLATION.  
 2. TOTAL HOOD SYSTEM TO BE IN COMPLETE CONFORMANCE WITH NFPA, AND ALL LOCAL CODES AND REGULATIONS.  
 3. COORDINATE ALL FIRE PROTECTION SYSTEMS WITH FIRE PROTECTION CONTRACTOR WHO SHALL ALSO BE RESPONSIBLE FOR ALL PERMITS AND TESTING REQUIRED.  
 4. PROVIDE WRAP SYSTEM WHERE APPROVED BY LOCAL CODES IN LIEU OF RATED ENCLOSURE.  
 5. PROVIDE ACCESS PANELS AS REQUIRED BY LOCAL CODE AND PER PLAN.  
 6. HOODS SHALL EXTEND MINIMUM 6\"/>

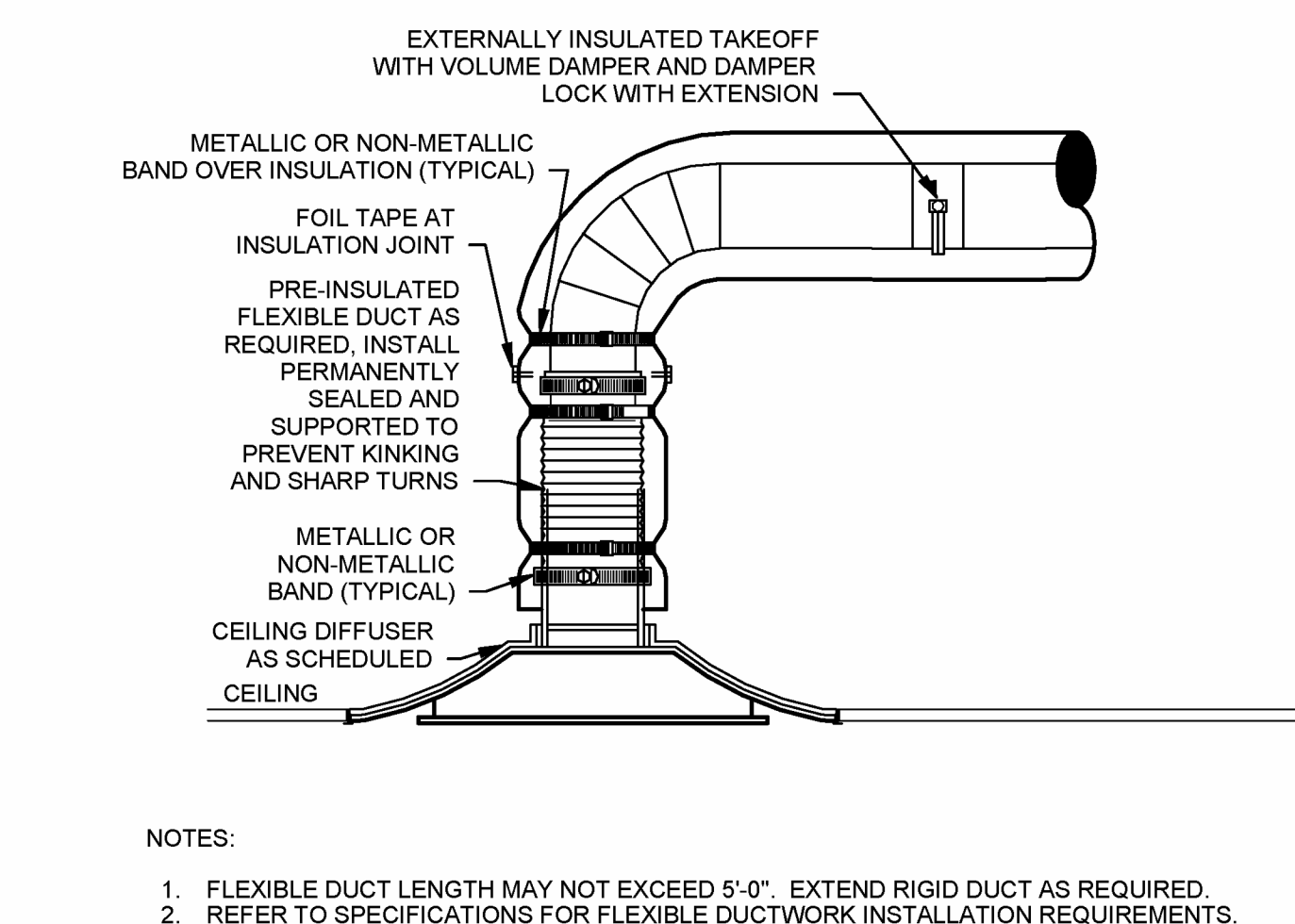
4 KITCHEN EXHAUST HOOD ELEVATION DETAIL NTS



3 DUCT MOUNTED REGISTER DETAIL NTS



2 HARD CEILING DIFFUSER DETAIL NTS



1 LAY-IN CEILING DIFFUSER DETAIL NTS

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IFC SET

MECHANICAL DETAILS

DRAWN BY: EHC

CHECKED BY: JH

JOB NO: 20240158.00

# M501

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Division 23: HEATING, VENTILATING, AND AIR CONDITIONING

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements.

B. DEFINITIONS

(Division): References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition.

- 1. Division 21 - Fire Suppression
2. Division 22 - HVAC
3. Division 23 - Electrical
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Install: "to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete and ready for intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division."

Engineer: Where referenced in this division, "Engineer" is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

NRTL: Nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ for use on this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the Engineer as equivalent to manufacturer specified." The term "approved" shall mean labeled, listed, or both, by an NRTL, and acceptable to the AHJ over this project.

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States or certified to meet the specified ASTM and ANSI standards.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Architect and Engineer. Workmanship shall be the finest possible by experienced mechanics. Installations shall comply with applicable codes and laws.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal noise caused by rattling equipment, piping, ducts, air devices, and squeaks in rotating components shall not be acceptable. Materials and equipment shall be of commercial specification grade in quality. Light duty and residential grade equipment shall not be accepted unless otherwise indicated.

Remove from the premises waste material present as a result of work, including cartons, crating, paper, stickers, and/or excavation material not used in backfilling, etc. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

Coordinate work with that of other trades so that the various components of the systems are installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

Unless otherwise indicated, the General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:

- 1. National Electrical Code (NEC)
2. National Fire Protection Association (NFPA)
3. Underwriters Laboratories (UL)
4. Occupational Safety and Health Administration (OSHA)
5. American Society of Mechanical Engineers (ASME)
6. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE)
7. American National Standards Institute (ANSI)
8. American Society of Testing and Materials (ASTM)
9. Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner.

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dust, dirt, paint, water, or physical damage. Replace insulation that has become wet at any time during construction. Drying the insulation is not acceptable. Seal any tears or joints of internal fiberglass insulation. Equipment and material damaged by construction activities shall be rejected and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work. Remove debris from ceiling/return air plenum, including dust.

Plug, seal, or cap open ends of ductwork and piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems. Remove temporary protection prior to starting equipment and turning the system over to the owner.

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request Form for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

- 1. Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
2. Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.
3. Proposed substitution has received necessary approvals of authorities having jurisdiction.
4. Same warranty will be furnished for proposed substitution as for specified Work.
5. If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.
6. Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such substitution will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No approvals will be considered after the contract is awarded unless specifically provided in the contract documents.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these contract documents and the design concept. Prior to transmitting submittals, verify that the equipment submitted is mutually compatible and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow for two weeks Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittal, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal date, equipment identification acronym as used on the drawings, and the contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. For equipment with motor starters or VFDs, include short circuit current ratings. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, size of members, or quantities; omissions of components or fittings; coordination of electrical requirements; and not coordinating items with actual building conditions and adjacent work. Proceed with the procurement and installation of equipment only after receiving approved shop drawings relative to each item.

K. ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive or direct download, as desired, from the Engineer for a shipping and handling fee of \$200 for a drawing set up to 12 sheets and \$15 per sheet for each additional sheet. Contact the Architect for written authorization and Engineer for the necessary release agreement form and to specify shipping method and drawing format. In addition to payment, the written authorization from the Architect and release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workman to save required literature shipped with the equipment itself for inclusion in this brochure.

Include Record Drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph "Submittals" for requirements.

N. SPARE PARTS

Furnish to Owner, with receipt, the following spare parts for the equipment furnished for this project:
1. One set of spare filters of each type required for each unit. In addition to the spare set of filters, install new filters prior to testing, adjusting, and balancing work and before turning system over to Owner.
2. Furnish one complete set of belts for each fan.
3. Furnish three operating keys for each type of air outlet and inlet that require them.

O. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project. Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules relating to start-up and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The Contractor and the Owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with Owner with at least 7 days advance notice.

P. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects, occurring within the warranty period(s), as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Accomplish work requiring interruption of building operation at a time when the building is not in operation and only with written approval of the Owner and/or tenant. Coordinate interruption of building operation with the Owner and/or tenant a minimum of seven (7) days in advance of work.

B. EXISTING EQUIPMENT REUSE AND REMOVAL

Remove all unused equipment, ductwork, piping, and associated supports. Cap ductwork and piping at mains and seal air and water tight.

Provide items of HVAC systems modification required because of building remodeling, as noted on the drawings or necessary for proper operation of existing materials and construction techniques when modifying existing systems unless specified otherwise. Coordinate additional requirements with General Contractor and Architect.

Seal existing existing ductwork required to be abandoned in place or not in use at the termination of the work.

Cap and seal weathertight existing roof curbs and roof openings to be abandoned in place as a result of equipment removal.

Clean and replace existing ductwork, diffusers, registers, and grilles intended for reuse as required or as indicated on drawings.

Clean and refurbish existing HVAC equipment required for reuse as required for proper operation including replacement of filters, belts, motors, remote controls, and safety interlocks.

C. EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width, depth and braced trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of new building without prior consultation with the Architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6 inch layers of well-tamped dry earth in a manner to prevent future settlement.

Excavation as specified herein shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Dispose of excavated materials that are considered unsuitable for backfill and surplus of excavated material which is not required for backfill to the satisfaction of the Architect.

D. COINCIDENTAL DAMAGE

Repair streets, sidewalks, drives, paving walls, finishes, and other facilities damaged in the course of the work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect.

E. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission from the Architect prior to cutting. Do not cut or disturb structural members without prior approval from the Architect and Structural Engineer. Coordinate all cut and closely coordinate all core drill locations with Architect and Structural Engineer prior to performing any work. Obtain approval from Architect and Structural Engineer for all core drills and penetrations at least four days prior to performing work. Penetrations shall be made as small as possible while maintaining required clearances between the building element penetrated and the system component. Patch around openings to match the adjacent construction including fire ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the Architect.

F. ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal piping, conduit, and rough-in except in unfinished areas and where otherwise shown.

G. STRUCTURAL SUPPORT SYSTEMS

Structural steel used for support of equipment, ductwork and piping shall be new, clean, and conform to ASTM Designation A-36.

Support mechanical components from the building structure. Do not support mechanical components from ceilings, other mechanical or electrical components, and other non-structural elements.

H. NOT USED

I. ACCESS PANELS AND DOORS

Refer to Architectural documents for specification of access panels and doors.

Provide access doors for all concealed equipment and duct and piping accessories that require service where indicated or as required, except where above tray-ceiling. Access doors shall be adequately sized for the devices served with a minimum size of 18 inches x 18 inches. Access doors must be of the proper construction for type of construction in which it is installed. Obtain Architect's approval of type, size, location and color before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation, including hinges, flush screwdriver-operated cam lock, and anchor straps. Provide access doors manufactured by Greenbeck, Micor, Thru, Zurn, or equal.

J. PENETRATIONS

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6 inches and smaller. Provide galvanized sheet metal sleeves for larger than 6 inches. Schedule 40 PVC sleeves are acceptable for installation in areas without return air plenums.

Seal elevated floor, exterior wall and roof penetrations weathertight and weathertight with non-shrink, non-hardening commercial sealant. Pack with mineral wool and seal both ends with minimum of 1/2 inch of sealant.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system.

Extend pipe insulation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeve for a minimum of 1 inch annular clear space between inside of sleeve and outside of insulation.

Provide prefabricated roof curbs where pipes and/or ductwork penetrate elevated slabs or the roof to the exterior. Provide cover over curb of weather-resistant material and seal penetration through the cover. Provide pipe collar of weather-resistant material with stainless steel pipe clamps for piping penetrations.

Provide box frames for rectangular openings welded 12 gauge galvanized steel attached to forms and of a maximum dimension established by the Architect. Notify the General Contractor or Architect before installing any box openings not shown on the Architectural or Structural drawings.

Seal concrete or masonry exterior wall penetrations below grade with "wall pipes" and mechanical sleeve seals. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Jay R. Smith, Josam, Wade, Watts or Zurn. Provide modular mechanical sleeve seals, manufactured by Calpic, Metraflex, or Thundeline / Link Seal.

Seal elevated concrete slab with water proof membrane penetrations with "wall pipes" and water proof sealant. Secure waterproof membrane flashing between "wall pipe" clamping flange and clamping ring. Provide cast iron "wall pipes" with integral waterstop ring manufactured by Jay R. Smith, Josam, Wade, Watts or Zurn.

Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 1/2 inch thick cellular foam insulation around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation shall extend to 2 inches above and below the concrete slab.

K. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilli, RectorSeal, Specified Technologies Inc., United States Gypsum Company, or 3M corp.

Through and Membrane Penetration Firestopping Systems Product Schedule: Provide UL listing, location, wall or floor rating, and installation drawing for each penetration fire stop system.

Where project conditions require modification to qualified testing and inspecting agency's illustrations for a particular firestopping condition, submit drawings for review and approval for penetration manufacturer's fire-resistance-rated assembly to a Division engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Include qualifications data for testing agency.

L. MOTORS AND STARTERS

Provide motors and starting equipment where not furnished with the equipment package. Motors shall have copper windings, Class B insulation, and standard squirrel cage with characteristics suitable for the equipment served. Motors controlled by variable frequency drives shall be rated for voltage peaks and minimum rise times in accordance with NEMA MG 1, Part 31. Motors 5 horsepower and larger controlled by variable frequency drives shall be provided with a shaft grounding system equal to Aegis SGR Bearing Protection Ring, Inpro-Seal (Inpro-Seal) or approved equal. Motors for air handling equipment shall be selected for quiet operation. Each motor shall be checked for proper rotation after electrical connection has been completed. Provide drip-proof enclosure for locations protected from weather and not in air stream of fan, and totally enclosed fan cooled enclosure for motors exposed to weather. Motors shall be manufactured by Century, General Electric, Louis Allis, Westinghouse, or approved equal.

M. VARIABLE FREQUENCY DRIVES

Provide PWM variable frequency drives (VFD) to control fan or pump motors as indicated on the drawings. Provide VFD as manufactured by AC Technology, Asea Brown Boveri, Danfoss, Reliance Electric, or Yaskawa. Include an integral, door-interlocked input circuit breaker or fused disconnect which may be padlocked in the "OFF" position.

Provide a magnetic contractor manual bypass integral to each drive. Provide two magnetic contractors, mechanically and electrically interlocked, to isolate the inverter output from line voltage. The inverter input shall be isolated by either a third magnetic contractor or a second disconnect switch to allow removal of power to the inverter for service while still operating the motor across the line. Bypass shall include a 120/160 control transformer, fused on both the primary and secondary, and bi-metallic thermal motor overload relays with adjustable trip settings.

Provide input AC line reactors without exception. Reactors shall be minimum 3 percent impedance, and "K" rated per IEEE C57-110 for harmonic current content. Reactors shall be integral to the drive enclosure without need for field wiring.

The VFD shall have an RS-485 port as standard. The standard protocols shall be Johnson Controls N2 bus, Modbus, and Siemens Building Technologies FLN. Optional protocols include DeviceNet, Ethernet, and Profibus shall be available. Each individual drive shall have the protocol in the base VFD. The use of third party gateways and multiplexers is not acceptable. All protocols shall be "certified" by the governing authority. Use of non-certified protocols is not allowed. The VFD shall allow the DDC system to control the digital and analog outputs of the drive via the serial interface. This control shall be independent of any VFD function. In addition, all the digital and analog inputs of the drive shall be capable of being monitored by the DDC system.

Drive supplier shall provide jobsite start-up, Owner training, and a one-year parts and on-site labor warranty. Multiple visits shall be included to allow for tuning and troubleshooting of the controls system as required.

N. ELECTRICAL WIRING

High voltage wiring is defined as 50 volts or higher. Low voltage wiring is defined as less than 50 volts. Line voltage wiring shall be provided by Division 26. Line voltage control and interlocking systems shall also be provided by Division 26. Low voltage control wiring shall be provided by Division 23. Furnish wiring diagrams to Division 26 as required for equipment hookup. Coordinate with Division 26 the actual wire sizing amps for mechanical equipment (from the equipment nameplate) to ensure proper installation.

Provide power and communication wiring with transient protection in accordance with IEEE C62.41.2. All control and interlock wiring shall comply with the NEC. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller. Control wiring not installed in conduit shall be UL rated for plenum installation. All NEC Class 1 (line voltage) wiring shall be UL listed in approved raceway according to the NEC and Division 26 requirements. Maximum allowable voltage for control wiring shall be 120 V. All low-voltage wiring shall meet NEC Class 2 requirements. Low-voltage wiring with circuits shall be sub-fused when required to meet Class 2 current limits.

Conduit for Control Wiring: EMT with compression fitting, cold rolled steel, zinc coated or zinc-coated rigid steel with threaded connections.

Pull and Junction Boxes: Size according to number, size, and position of entering raceways as required by National Electrical Codes. Enclosure type shall be suited to location.

NOTE: EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AS NOTED BY ANY PERSON. OWNER MAY NOT RELY ON EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH OTHER DISCIPLINES AND EXISTING CONDITIONS.

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2002 NEW YORK STATE ENERGY CODE.

SPECIAL INSPECTIONS: OWNER SHALL SUBCONTRACT WITH A NEW YORK STATE REGISTERED SPECIAL INSPECTION AGENCY TO PERFORM THE REQUIRED SPECIAL INSPECTIONS FOR THE MECHANICAL, PLUMBING AND FIRE PROTECTION SYSTEMS AS REQUIRED BY THE NEW YORK CITY BUILDING CODE. OWNER SHALL PAY AN EXPEDITER TO FILE ALL REQUIRED FORMS.

BUILDING DEPARTMENT FILING NOTE: THIS PLAN IS APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.</

Install wiring parallel to building lines wherever possible. Conceal all control wiring in finished rooms. Do not install Class 2 wiring in raceway containing Class 1 wiring. Boxes and panels containing high voltage wiring and equipment may not be used for low-voltage wiring except for the purpose of interconnecting the two wires (e.g., relays and transformers). All wire-to-device and wire-to-wire connections shall be made at a terminal block or terminal strip. All runs of communication wiring shall be unspliced length that length is commercially available. Verify the integrity of the entire network following the cable installation. Use appropriate test measures for each particular cable. Label all wiring and cabling at each end within 2 inches of termination with the controller termination number. Label control devices used in the system with permanent labels using the identifiers that match the record drawings.

#### O. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include, but not be limited to, fuses, vents, intakes, associated roof jacks and caps to outdoors, dampers, in-line fans, roof fans, and control interlocks, etc. as required for proper operation of the complete system in accordance with the manufacturer's instructions.

Contractor shall be responsible for correct rough-in dimensions and shall verify them with Architect and/or equipment supplier prior to service installations.

#### P. SYSTEM TESTING, ADJUSTING, AND BALANCING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test each system installed under this contract. Assume all costs involved in making the tests and repairing and/or replacing any damages resulting therefrom.

The final test and balance of the building HVAC systems shall be completed by National TAB (no exceptions) and contracted by the General Contractor. The representative from National TAB shall be certified by the National Environmental Balancing Bureau (NEBB), Associated Air Balance Council (AABC), or Testing, Adjusting and Balancing Bureau (TABJ), TAB shall be performed in accordance with the most current edition of the certified agencies procedural standard for testing, adjusting and balancing and shall comply with the strictest interpretation of that standard for execution and reporting of all TAB work.

Work shall include but not be limited to: Perform test readings on fans, units, coils, pumps, etc. and adjust equipment to deliver specified amounts of airflow and balancing air supply and return air. Measure air entering and leaving ducts at various temperatures and pressures at design flow, fan and unit test readings, motor voltage and amp draws, etc. and submit six copies of the final compilation of data to the Architect for evaluation and approval before final inspection of the project. Balance air systems to within plus or minus 10 percent for main ducts and plus or minus 5 percent for main ducts and air handling equipment and within plus or minus 5 percent of air shown on the drawings. TAB Contractor shall record space temperatures and make adjustments in airflow to each of the ducts to obtain uniform temperature (no greater than +/- 3 F) in spaces. Document temperatures and adjustments in tab report. Adjust equipment to operate at specified design conditions. TAB report shall include a "report summary/markers" section in accordance with the procedural standard that provides both system set up and a summary of deficiencies as defined by the procedural standard.

TAB Contractor shall be responsible to calibrate, set, and adjust automatic temperature control sensors, actuators and control devices. Check proper sequencing of interlock systems, and operation of safety controls, adjust thermostats, and control setpoints. Limits and time based adjustment to operate in accordance with the performance requirements of the Construction Documents. Adjust pumps, fans, etc. as per proper manufacturer's instructions. Architect and adjustments have been made and that system is operating satisfactorily. Calibrate, set, and adjust automatic temperature controls. Check proper sequencing of interlock systems, and operation of safety controls.

Division 23 contractor shall align bearings and replace bearings that have dirt or foreign material in them with new bearings without additional cost to the Owner.

#### Q. VIBRATION ISOLATION

Provide vibration isolation equipment and materials by a single manufacturer. If type and deflection for specific equipment is not specified within the contract documents, reference ASHRAE Handbook "HVAC Applications" or provide per manufacturer's recommendations. Approved manufacturers include Caldyn, Kinetics Noise Control, Mason Industries, Inc., Vibration Eliminator Co., Inc., Vibration Mounting and Controls, or Vibro-Acoustics, provided their systems are in compliance with the specified design and performance requirements.

General Requirements: Select vibration isolators by the weight distribution to produce uniform deflection. Vibration isolators shall either known un-deflected heights or calibration markings so that, after adjustment, the static deflection can be verified, thus determining that the load is within the proper range of the isolator. Isolators shall operate in the linear portion of their load versus deflection curves. Springs without access capacity should not be used. Coat vibration isolators with a factory-applied paint. Coat vibration isolators exposed to weather and other corrosive environments with factory-applied corrosion resistance protection. Install and adjust vibration isolators in accordance with manufacturer's written instructions.

Pipe connections: Provide flexible connectors for piping system connections on equipment side of shutoff valves for all pumps, mechanical equipment supported or suspended by spring isolators, and where indicated on drawings. Fabricate flexible piping connectors from stainless steel or rubber materials suitable for system fluid. Flexible piping connectors shall be bellows, spherical or braided hose type as recommended by the manufacturer for the application.

#### Isolator Types:

1. Type WP (Wet/Paste Pads): Provide 5/16 inch thick neoprene pads ribbed or waffled on both sides. Manufacture pads with bridge bearing quality neoprene and a maximum diameter of 15 percent strain, with a static deflection of 0.05 inches. Incorporate steel load-spreading plates where required between the equipment and the neoprene pad to provide selected deflection. If the isolator is bolted to the structure, install a neoprene mounting sleeve under the bolt head between the steel washer and the base plate to prevent metal to metal contact. Provide Mason Industries Type W or equal.

2. Type SPNH (Spring and Neoprene Hangers): Provide a steel hanger box containing a laterally stable, double-deflecting neoprene isolator in series with a steel spring. Design springs so the ratio of the horizontal to vertical spring constant is between one and two. The spring diameter shall be not less than 80 percent of the compressed height of the spring at rated load. Loaded springs shall operate within the linear portion of their load versus deflection curve or a deflection range of not less than 50 percent above design deflection. Spring wire size shall be larger than wire size of the hanger rod. The hanger rod shall be threaded through a 20 degree arc. Include a neoprene bushing to prevent contact between the longer hanger rod and hanger box and short-circuiting the isolating function. The neoprene element shall have a maximum diameter of 50 and designed for 15 percent strain, with a static deflection of not less than 0.4 inches. Unless otherwise specified, the static deflection of SPNH hangers shall be 2 inches. Provide SPNH hangers with 1 inch static deflection for water source heat pumps and fan-powered VAV terminal units. When installed, do not cock the spring element and do not allow the hanger box to rotate through a full 360 degree arc without encountering obstructions. Provide Mason Industries Type 30N or equal.

3. Type NR (Neoprene Bushing): Provide neoprene, rubber-in-shear bushings for lightweight (less than 100 pounds), suspended equipment supported from structure and angle iron or Unistrut. Select neoprene with a maximum diameter of 50 and designed for 15 percent strain, with a static deflection of 0.15 inches. Provide Mason Industries Type HMIB or equal.

#### S. AIR FILTERS

Provide AAF/Flanders Perfect Pleat HC MR, Camfil Fair 3030, pleated, throwaway type filters, minimum MERV 8, or similar as manufactured by Air Filter, Inc., Biodynamic, Columbus, Koch, or approved equal, unless otherwise indicated.

Temporary filters used to protect openings in ductwork and inside equipment when permanent HVAC equipment is used during the construction period shall be pleated, throwaway type filters, minimum MERV 6.

#### T. REFRIGERANT AND OIL

Provide full refrigerant and oil charge in new air conditioning refrigeration systems, and maintain it for full term of the guarantee.

#### U. IDENTIFICATION

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Color code pipe markers to comply with ANSI A13.1.

Install pipe markers on each HVAC piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

Provide plastic laminate or brass valve tag on every valve, coil and control device in each HVAC piping system; exclude check valves, valves within factory fabricated equipment units, and shut-off valves at HVAC terminal devices and similar rough-in connections of end-use fixtures and units.

Provide manufacturer's standard laminated plastic, color coded equipment markers. Conform to the following color code: Green for Cooling; Yellow for Heating; Yellow/Green for Combination Cooling and Heating; Brown for Energy Reclamation; Blue for other equipment types. Conform to ANSI A13.1 for Hazardous Equipment.

Provide stenciled signs for equipment identification at Contractor's option or where distance of required identification requires lettering larger than 1 inch height. Stencil paint shall be exterior type, oil-based, alkylid amine, minimum 1-1/4 inch height or greater as required for long distance identification, white or black color for best contrast.

Provide duct markers or provide stenciled signs and arrows indicating ductwork service and flow direction in black or white lettering set best contrast with duct or insulation color. Locate markers maximum 50 feet along each duct side and within 5 feet of all control and balancing dampers or branch ducts more than 25 feet length and within 5 feet on each side of wall, floor, and ceiling penetrations. Provide additional markers in congested areas or at multiple duct runs as required for clarity.

#### 3. DUCT INSULATION, DUCTWORK, ACCESSORIES, FLUES AND FANS

##### A. DUCT INSULATION

Provide fiberglass duct liner with fibers firmly bonded together with a thermosetting resin. Liner surface shall serve as a barrier against infiltration of dust and dirt, shall meet ASTM C1338 for fungi resistance, and shall be cleanable using duct cleaning methods and equipment outlined by North American Insulation Manufacturers Association (NAIMA) duct cleaning guide. Install with linear adhesive and mechanical fasteners in accordance with manufacturer's instructions and recommendations. Ductwork sizes shown on drawings are inside clear dimensions. Increase sheet metal by liner thickness in both directions where liner is installed.

Provide rectangular liner conforming to ASTM C1071, Type I or II that is 1-1/2 inch thick, 1-1/2 pound density, minimum R-6.0 CertainTeed Corp. "Toughdura" or equivalent, Johns Manville, Owens-Corning, or Knaf. Provide round liner that is 1-1/2 inch thick, 4 pound density, minimum R-6.0 Johns Manville "Spiroacoustics Plus" or equivalent, CertainTeed or Owens-Corning.

Provide liner on the following interior air ducts and where specified on the drawings:

- Exposed round and rectangular supply ductwork.
- Exposed round and rectangular return ductwork.

At interface of lined and wrapped ductwork, overlap lined ductwork at least 2 feet beyond wrapped insulation.

Cover concealed, rigid ductwork with ASTM C553, Type II flexible fiberglass insulation. Installed insulation shall be 2 inch thick, 3/4 pound density, minimum R-6 duct wrap, CertainTeed or equivalent, Johns Manville, Owens-Corning, or Knaf with heavy-duty foil-scrim-kraft facing, and with joints taped with 3 inch wide foil tape as follows:

- Round and rectangular supply and return air ductwork.
- Unlined Round and rectangular outside air ductwork.
- Round and rectangular exhaust and relief air ductwork within 10 feet of exterior discharge.

Cover Outdoor air, Exhaust air and Relief air Plenums connected to exterior louvers with 1-1/2 inch thick, 1.5 pound density, rigid fiberglass insulation conforming to ASTM C618, Class 2.

Insulating materials, adhesives, coatings, etc., shall not exceed flame spread rating of 25 and smoke developed rating of 50 per ASTM E84. Containers for mastics and adhesives shall have UL Label.

For supply and return ductwork located exterior to the building, insulation shall be minimum R-8.0. Provide insulation and jacket in accordance with one of the following three options:

- Exterior insulation and jacket consisting of 2 inch thickness of Armaflex flexible elastomeric insulation or equivalent meeting ASTM C534 with integral 12 mil thick UV resistant cladding material at factory. Cover all seams with Armaflex seal tape.
- Exterior elastomeric insulation meeting ASTM C534 or 3 lb density rigid fiberglass meeting ASTM C612, and jacket consisting of 20 gauge corrugated aluminum jacket with aluminum fitting covers and minimum three aluminum attachment bands per section.
- Exterior insulation consisting of 2 inch thickness of flexible elastomeric insulation meeting ASTM C534 or 3 lb density rigid fiberglass meeting ASTM C612, and jacket consisting of 15.5 mil thick Venturacul Plus UV resistant cladding.

Install exterior ductwork with sufficient slope to ensure that water can pond anywhere on the duct. Drainage must be achieved by sloping ductwork - not by varying the insulation thickness. Locate longitudinal seams of outer shell (aluminum, flexible elastomeric, or cladding as applicable) at bottom of duct. Install cladding in strict conformance with cladding manufacturer's instructions.

#### B. DUCTWORK

Provide galvanized steel ductwork and housings as shown on drawings. Construct ductwork including fittings and transitions in conformance with current SMACNA standards relative to gauge, bracing, joints, etc. Minimum thickness of duct shall be 26-gauge sheet metal and ductwork shall be galvanized. Verify the integrity of the entire network following the cable installation, and closer if required for sufficient rigidity to prevent vibration. Support horizontal runs of duct from strap iron hangers on centers not to exceed 8'-0". Do not support ceiling grid, conduits, pipes, equipment, etc. from ductwork. Coordinate routing of ductwork with other contractors such as piping, electrical conduit, and associated supports and hangers for the ductwork.

Provide pre-engineered roof duct supports supports by Cooper-B-Line, Elita Composites, ERICO, FNNI, Mio, PRC Manufacturing, PHP Systems, Roof Top Box, Unistrut (Alkore), Zsi Foster, or approved equal. Support ductwork on the roof with pre-engineered roof duct supports that rest on top of the roofing membrane, not requiring any attachment to the roof structure and not penetrating the roof assembly, with embedded support fixtures as required to support the duct. Provide steel pedestal type supports with minimum 1x3 inch thermal break insulation and closed-cell polyethylene block with length as required. Maintain minimum 5 inches clearance under duct to finished roof surface.

Coordinate with the pre-engineered roof duct support manufacturer to anchor the duct supports directly to the roof structure in accordance with the manufacturer's installation instructions or provide intermediate duct supports engineered to meet the wind resistance and seismic design criteria. Reference Section, "PRE-ENGINEERED ROOF EQUIPMENT SUPPORTS."

Construct non-VAV supply ducts to meet SMACNA positive pressure of 2 inches w.g. Construct Return, Outdoor and Exhaust ductwork upstream of fans to meet SMACNA negative pressure of 1 inch w.g. Construct exhaust ductwork downstream of fans to meet SMACNA positive pressure of 1 1/4 inch w.g. Make grease drain trough filled with replaceable, absorbent material or replaceable cup and cap with absorbent material which absorbs grease and rejects water, and insulated curb, shall be installed in accordance with NFPA 96 and local codes.

Provide mild phosphatized or galvanized finish for exposed ductwork to be field painted. Shop treated sheet metal shall have galvanized metal primer applied in the shop after fabrication and prior to shipping.

Seal ductwork with heavy liquid sealant, Hardcoat Irongrit 601, Design Polymer DP 1010, Unistrut Mogul duct sealer or approved equal, applied according to sealant manufacturer's instructions. Seal all longitudinal and transverse ductwork joints airtight to meet SMACNA Seal Class A. Tapes and mastics shall be listed and labeled in accordance with UL 181A.

Provide radius elbows, turns, and offsets with a minimum centerline radius of 1-1/2 times the duct width. Where space does not permit full radius elbows, provide short radius elbows with a minimum of two continuous splices. Vanes shall be the entire length of the ductwork. Provide radius elbows with a minimum of two continuous splices. Vanes shall be the entire length of the ductwork. Provide gasket at flanged connection to fan rated for 1500 degrees Fahrenheit and grease applications. Enclose duct in fireproof enclosure per locally adopted mechanical code or, if approved by the local code official, in fire rated wrap insulation. Insulation shall be minimum two-hour rated duct wrap insulation for Type I hood grease exhaust duct applications and shall conform to ASTM E2306 where required to comply with IMC. Insulation shall be flexible wrap material for minimum 200 degrees Fahrenheit and for zero clearance to combustibles. Insulation shall be non-mineral wool, passive, low bio-persistent fiber totally encapsulated on all sides with aluminum foil, insulation shall be manufactured by Certainted, Thermal Ceramics, Uniflex or 3M. Seal duct back towards hood at minimum of 1/4 inch per linear foot. At Contractor's option, a UL listed concentric ductwork that complies with UL 1798 standard for grease ducts may be used in lieu of the welded black iron duct for conveying hot exhaust fan. Ductwork package shall be as manufactured by Metal-Fab, Scheibel, Selkirk, or approved equal. Provide manufacturer's UL listing number and verification certificate as a part of the shop drawing submission. Install duct package in strict conformance with manufacturer's instructions and recommendations.

All portions of grease duct systems shall be tested for leakage in accordance with the "Grease Duct Test" paragraph of the IMC. Leakage tests shall be by water leakage type or equivalent test methods as approved by the local code official to determine that all joints are airtight. Water leakage test shall be performed by Environmental Corporation of America or approved testing contractor. Tests shall be performed in the presence of the local code official. Any joints found defective shall be repaired and retested until satisfactory results are obtained. The contractor shall submit a copy of the grease duct leakage test report to the architect/engineer complete with the approval signature of the local code official.

##### 4. HVAC EQUIPMENT

A. ELECTRIC UNIT HEATERS Provide electric unit heaters as scheduled on the drawings, manufactured by Berko, Branch, Indeco, Market, O'Mark, or Raywall, standard type propeller unit heaters with sidewall mounting brackets and hardware for horizontal airflow. Furnish heater fan motors complete with a manual motor starter with automatic thermal cutouts sized to the motor load, disconnect switch, and other code required safety devices. Provide unit mounted thermostat and manual summer/winter changeover switch.

##### B. AIR CURTAINS

Furnish air curtains manufactured by Berner, Marley, Mars, or Powered Air, of sizes and capacities shown on drawings. Units shall comply with AMCA 220, AHRI 410 and NSF 37. Unit housing shall be constructed of aluminum, aluminumized steel, or galvanized steel with powder coated end panels. Units shall have an adjustable air curtain with way of multi-speed motors and adjustable intake louvers. Units shall have an adjustable integral discharge nozzle. Units shall have statically and dynamically balanced fans with direct drive fan drives. Motors shall be a single speedlessly mounted, continuous duty, with permanently sealed lubricated ball bearings, and internal disconnect.

Furnish unit with washable panel filters with welded galvanized steel mounting frames, gasketed, with fasteners for bolting together built-up filter banks. Furnish unit with built-in line voltage thermostat wired to air curtain junction box. Furnish with plunger type automatic door switch, start-stop pushbutton switch, factory-installed time-delay relay, and mounting brackets and accessories. Furnish unit with motor control panel complete with motor starter, 115V transformer with primary and secondary buses, terminal strip, and NEMA 250 enclosure.

5. PIPING AND PIPING SPECIALTIES A. REFRIGERANT PIPING AND INSULATION Copper Tubing: ASTM B230, Type ACR, hard-drawn straight lengths, and soft-annealed coils, seamless copper tubing. Tubing shall be factory cleaned, ready for installation, and have ends capped to protect cleanliness of pipe interiors prior to shipping. Refrigerant Line Kite: Soft-annealed copper tubing with pipe diameters as recommended by the manufacturer and of length as required for the installation. Tubing shall be factory or field insulated with flexible unicellular insulation with thickness as specified below.

Fillings: wrough-rip fittings: ANSI B16.22, streamlined pattern. Solder filler metals: 1. AWS B.3, Classification B312-95.5 Tin-Antimony. 2. AWS B.3, Classification BCU-5: Phosphorus (P) 4.8-5.2 percent, Silver (Ag) 14.5-15.5 percent, and Copper (Cu) remainder.

Brazing mechanical joints. Solder joints connecting to refrigerant valves and specialties. Continuously purge the pipe and fittings during brazing with an inert gas per manufacturer's recommendation (e.g., dry nitrogen) to prevent formation of scale. Maintain purge until the joint is cool to the touch. Provide temporary cap or cover on completed joints with open ends to prevent entry of contaminating materials.

Insulate refrigerant lines with flexible elastomeric insulation, Armaflex or equal. Insulate suction and liquid lines between the expansion valve, evaporator, and compressor with 1/2 inch thick insulation on pipes less than 1 inch in size and 1 inch thick for pipes 1 inch and larger. Insulate hot gas and liquid lines between the compressor condenser, and expansion valve with 1 inch thick insulation on pipes less than 1-1/2 inch and 1-1/2 inch thick for pipes 1-1/2 inch and larger. Pipe attachments shall be copper-plated or have nonmetallic coating of smoke developed rating of 50 or less when tested in accordance with ASTM E84. Coat insulation that is exposed to the elements with a protective sealer. Install and support piping to keep noise and vibration to a minimum. Support and secure piping to Unistrut type supports so that no vibration passes to the building structure. Pipe attachments shall be copper-plated or have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing. Install a support within one foot of each change of direction. Mount pipe hangers around the outside of the insulation with saddles to prevent hangers from rupturing the insulation. Replace insulation that is cut or broken by the hangers.

Run refrigerant lines parallel and perpendicular to wall and floor lines and to appear straight and in good order. Pitch suction lines down slightly (1 inch in 20 feet) towards the compressor. Provide oil traps at the base of vertical suction risers over 6 feet high. Install liquid line sight glasses in liquid lines near the expansion valve. Factory mount expansion valves with the sensing bulbs shipped loose. Field mount expansion valve bulb after refrigerant piping is complete (damage may occur if bulbs come in contact with heat).

For systems of 5 ton capacity and smaller, the contractor shall have the option to provide copper refrigerant tubing line set sized as recommended by equipment manufacturer and of length as required for the installation. Provide quick-connect flare tubing compression fittings, solder connections, or brazed connections as recommended by the manufacturer to match the connections of the condensing unit and evaporator coil.

6. SYSTEM EVACUATION AND CHARGING Blow out refrigeration lines with dry nitrogen at a suitable pressure before making final connection at the condensing unit or coil to ensure against dirt, scale, or other foreign material being in the lines. Draw a vacuum to 29 inches of mercury. Break this vacuum by charging dry refrigerant gas into the system, raising the pressure to 2 PSIG. Repeat the latter two steps for a triple evacuation before the final evacuation is started. Make final evacuation by reducing the system absolute pressure to a maximum of 0.5 millimeters (500 microns) and allowing the pump to run at this pressure for a minimum of two hours.

Repeat the proper amount of refrigerant charge per the manufacturer's recommendations. Record the amount of refrigerant by weight charged into the system for each circuit recorded on the drawings. Provide a minimum 14-pound on tags and attach tags to the liquid line near the condensing unit. Refrigerant shall be supplied by the HVAC Contractor.

7. TEMPERATURE CONTROLS A. GENERAL REQUIREMENTS Provide a complete system of temperature controls including controllers, control panels, thermostats, sensors, time switches, override timers, actuators, relays, and wiring required to provide the desired control systems specified on the drawings.

Submit shop drawings of equipment provided for temperature control. Submit operation and maintenance data, including trouble-shooting maintenance guide, step-by-step procedures indexed for each controller and thermostat function, inspection period, cleaning methods and materials, and calibration tolerances.

Provide integrated wiring diagrams showing interconnections between field installed equipment and package wiring furnished with the HVAC equipment. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller.

Provide supervision and on-job checking service as required to ensure that installation and operation of the temperature control system meets requirements of the drawings, specifications, and sequences of operation. The system shall be guaranteed for a period of one year following the acceptance of the system by the Architect/Engineer. Correct defects occurring during this period at no additional cost to the Owner.

Install control devices with top of device at 48 inches AFF to meet ADA requirements unless otherwise noted on the plans.

B. WIRING Provide electrical and control wiring as specified under the section "Electrical Wiring."

C. THERMOSTAT CONTROL EQUIPMENT Provide thermostat control equipment with sufficient communication, programming, input and output connections, and modulating or staging capability to meet the sequence of operations. Provide thermostats with the features as indicated:

- LCD or LED display screen.
- Button or touchscreen interface.
- Display temperature.
- Display temperature setpoint.
- Adjust temperature setpoint.
- Limit temperature setpoint adjustment within plus or minus 3 degrees F.
- Display relative humidity.
- Adjust relative humidity.
- Display operating mode.
- Adjust operating mode.
- Adjust schedule, minimum seven day occupied/unoccupied.
- Security lockout.
- At contractor's option where multiple sensors are shown, the sensors may be provided with the thermostat in a single device.

Seven day programmable, occupied/unoccupied thermostats for on/off or multiple stages of heating and cooling systems shall be used. Order thermostat with multi-stage capability as required to match scheduled unit cooling/heating patterns.

Remote sensors integrated with the seven day programmable thermostat shall be Honeywell TR1/TR21-H remote sensor or equal.

Provide integrated wiring diagrams showing interconnections between field installed equipment and package wiring furnished with the HVAC equipment. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller.

Provide supervision and on-job checking service as required to ensure that installation and operation of the temperature control system meets requirements of the drawings, specifications, and sequences of operation. The system shall be guaranteed for a period of one year following the acceptance of the system by the Architect/Engineer. Correct defects occurring during this period at no additional cost to the Owner.

Install control devices with top of device at 48 inches AFF to meet ADA requirements unless otherwise noted on the plans.

B. WIRING Provide electrical and control wiring as specified under the section "Electrical Wiring."

C. THERMOSTAT CONTROL EQUIPMENT Provide thermostat control equipment with sufficient communication, programming, input and output connections, and modulating or staging capability to meet the sequence of operations. Provide thermostats with the features as indicated:

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- Adjust temperature setpoint.
- Limit temperature setpoint adjustment within plus or minus 3 degrees F.
- Display relative humidity.
- Adjust relative humidity.
- Display operating mode.
- Adjust operating mode.
- Adjust schedule, minimum seven day occupied/unoccupied.
- Security lockout.
- At contractor's option where multiple sensors are shown, the sensors may be provided with the thermostat in a single device.

Seven day programmable, occupied/unoccupied thermostats for on/off or multiple stages of heating and cooling systems shall be used. Order thermostat with multi-stage capability as required to match scheduled unit cooling/heating patterns.

Remote sensors integrated with the seven day programmable thermostat shall be Honeywell TR1/TR21-H remote sensor or equal.

Provide dampers as manufactured by Greenheck, CESCO, Pottoff, Nakor, or Ruskin. Reference manufacturer with model number for outside air dampers is Ruskin CD-30 constructed of aluminum, and all other applications is Ruskin CD-35 constructed of galvanized steel.

Provide damper operator for each automatic damper with sufficient capacity to operate the damper under all conditions and to guarantee tight close-off of dampers against system pressure encountered. Each operator shall be provided with spring-return for normally closed or normally open position for fail safe operation to account for fire, low temperatures, or power interruption as required by the control systems specified on the drawings. Damper operators shall be manufactured by Belimo, Johnson Controls or approved equal. Provide transformer for damper motors if different voltages are required.

##### J. EXHAUST AIR SYSTEMS

Provide roof mounted exhaust fans as scheduled on the drawings, or equal ACME, Carnes, Cook, Greenheck, Pennbarry, or Twin City Fans complete with aluminum housing, aluminum centrifugal wheel, motor with integral thermal overload protection, disconnect switch mounted inside the housing, birdscreen, backdraft damper, and pate prefabricated roof curb. Three phase fans shall be furnished with magnetic starters with push button station.

Provide roof mounted upblast exhaust fans as scheduled on the drawings, Accorex, ACME, Carnes, Cook, Greenheck, Pennbarry, or Twin City Fans complete with aluminum housing, aluminum centrifugal wheel, motor with integral thermal overload protection, disconnect switch mounted inside the housing, birdscreen, backdraft damper, and pate prefabricated roof curb. Three phase fans shall be furnished with magnetic starters with push button station.

##### K. KITCHEN EXHAUST AIR SYSTEMS

Install kitchen grease exhaust package furnished by the owner. System includes kitchen hood, grease exhaust fan/pollution control unit, filtered makeup air unit and a mechanical or electrical gas shutoff valve provided with the kitchen exhaust system to shutoff fuel or power source to cooking equipment upon detection of fire. Valve shall have a clearly marked open/closed indicator.

Provide ducts connecting Type 1 exhaust hoods to exhaust fans made of #16 gauge black iron with continuously welded joints and clean-out doors. Provide transition at connection to fan with opening size equal to or greater than the venturi opening of the fan inlet. Provide gasket at flanged connection to fan rated for 1500 degrees Fahrenheit and grease applications. Enclose duct in fireproof enclosure per locally adopted mechanical code or, if approved by the local code official, in fire rated wrap insulation. Insulation shall be minimum two-hour rated duct wrap insulation for Type I hood grease exhaust duct applications and shall conform to ASTM E2306 where required to comply with IMC. Insulation shall be flexible wrap material for minimum 200 degrees Fahrenheit and for zero clearance to combustibles. Insulation shall be non-mineral wool, passive, low bio-persistent fiber totally encapsulated on all sides with aluminum foil, insulation shall be manufactured by Certainted, Thermal Ceramics, Uniflex or 3M. Seal duct back towards hood at minimum of 1/4 inch per linear foot. At Contractor's option, a UL listed concentric ductwork that complies with UL 1798 standard for grease ducts may be used in lieu of the welded black iron duct for conveying hot exhaust fan. Ductwork package shall be as manufactured by Metal-Fab, Scheibel, Selkirk, or approved equal. Provide manufacturer's UL listing number and verification certificate as a part of the shop drawing submission. Install duct package in strict conformance with manufacturer's instructions and recommendations.

All portions of grease duct systems shall be tested for leakage in accordance with the "Grease Duct Test" paragraph of the IMC. Leakage tests shall be by water leakage type or equivalent test methods as approved by the local code official to determine that all joints are airtight. Water leakage test shall be performed by Environmental Corporation of America or approved testing contractor. Tests shall be performed in the presence of the local code official. Any joints found defective shall be repaired and retested until satisfactory results are obtained. The contractor shall submit a copy of the grease duct leakage test report to the architect/engineer complete with the approval signature of the local code official.

##### 4. HVAC EQUIPMENT

A. ELECTRIC UNIT HEATERS Provide electric unit heaters as scheduled on the drawings, manufactured by Berko, Branch, Indeco, Market, O'Mark, or Raywall, standard type propeller unit heaters with sidewall mounting brackets and hardware for horizontal airflow. Furnish heater fan motors complete with a manual motor starter with automatic thermal cutouts sized to the motor load, disconnect switch, and other code required safety devices. Provide unit mounted thermostat and manual summer/winter changeover switch.

##### B. AIR CURTAINS

Furnish air curtains manufactured by Berner, Marley, Mars, or Powered Air, of sizes and capacities shown on drawings. Units shall comply with AMCA 220, AHRI 410 and NSF 37. Unit housing shall be constructed of aluminum, aluminumized steel, or galvanized steel with powder coated end panels. Units shall have an adjustable air curtain with way of multi-speed motors and adjustable intake louvers. Units shall have an adjustable integral discharge nozzle. Units shall have statically and dynamically balanced fans with direct drive fan drives. Motors shall be a single speedlessly mounted, continuous duty, with permanently sealed lubricated ball bearings, and internal disconnect.

Furnish unit with washable panel filters with welded galvanized steel mounting frames, gasketed, with fasteners for bolting together built-up filter banks. Furnish unit with built-in line voltage thermostat wired to air curtain junction box. Furnish with plunger type automatic door switch, start-stop pushbutton switch, factory-installed time-delay relay, and mounting brackets and accessories. Furnish unit with motor control panel complete with motor starter, 115V transformer with primary and secondary buses, terminal strip, and NEMA 250 enclosure.

##### 5. PIPING AND PIPING SPECIALTIES

A. REFRIGERANT PIPING AND INSULATION Copper Tubing: ASTM B230, Type ACR, hard-drawn straight lengths, and soft-annealed coils, seamless copper tubing. Tubing shall be factory cleaned, ready for installation, and have ends capped to protect cleanliness of pipe interiors prior to shipping. Refrigerant Line Kite: Soft-annealed copper tubing with pipe diameters as recommended by the manufacturer and of length as required for the installation. Tubing shall be factory or field insulated with flexible unicellular insulation with thickness as specified below.

Fillings: wrough-rip fittings: ANSI B16.22, streamlined pattern. Solder filler metals: 1. AWS B.3, Classification B312-95.5 Tin-Antimony. 2. AWS B.3, Classification BCU-5: Phosphorus (P) 4.8-5.2 percent, Silver (Ag) 14.5-15.5 percent, and Copper (Cu) remainder.

Brazing mechanical joints. Solder joints connecting to refrigerant valves and specialties. Continuously purge the pipe and fittings during brazing with an inert gas per manufacturer's recommendation (e.g., dry nitrogen) to prevent formation of scale. Maintain purge until the joint is cool to the touch. Provide temporary cap or cover on completed joints with open ends to prevent entry of contaminating materials.

Insulate refrigerant lines with flexible elastomeric insulation, Armaflex or equal. Insulate suction and liquid lines between the expansion valve, evaporator, and compressor with 1/2 inch thick insulation on pipes less than 1 inch in size and 1 inch thick for pipes 1 inch and larger. Insulate hot gas and liquid lines between the compressor condenser, and expansion valve with 1 inch thick insulation on pipes less than 1-1/2 inch and 1-1/2 inch thick for pipes 1-1/2 inch and larger. Pipe attachments shall be copper-plated or have nonmetallic coating of smoke developed rating of 50 or less when tested in accordance with ASTM E84. Coat insulation that is exposed to the elements with a protective sealer. Install and support piping to keep noise and vibration to a minimum. Support and secure piping to Unistrut type supports so that no vibration passes to the building structure. Pipe attachments shall be copper-plated or have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing. Install a support within one foot of each change of direction. Mount pipe hangers around the outside of the insulation with saddles to prevent hangers from rupturing the insulation. Replace insulation that is cut or broken by the hangers.

Run refrigerant lines parallel and perpendicular to wall and floor lines and to appear straight and in good order. Pitch suction lines down slightly (1 inch in 20 feet) towards the compressor. Provide oil traps at the base of vertical suction risers over 6 feet high. Install liquid line sight glasses in liquid lines near the expansion valve. Factory mount expansion valves with the sensing bulbs shipped loose. Field mount expansion valve bulb after refrigerant piping is complete (damage may occur if bulbs come in contact with heat).

For systems of 5 ton capacity and smaller, the contractor shall have the option to provide copper refrigerant tubing line set sized as recommended by equipment manufacturer and of length as required for the installation. Provide quick-connect flare tubing compression fittings, solder connections, or brazed connections as recommended by the manufacturer to match the connections of the condensing unit and evaporator coil.

6. SYSTEM EVACUATION AND CHARGING Blow out refrigeration lines with dry nitrogen at a suitable pressure before making final connection at the condensing unit or coil to ensure against dirt, scale, or other foreign material being in the lines. Draw a vacuum to 29 inches of mercury. Break this vacuum by charging dry refrigerant gas into the system, raising the pressure to 2 PSIG. Repeat the latter two steps for a triple evacuation before the final evacuation is started. Make final evacuation by reducing the system absolute pressure to a maximum of 0.5 millimeters (500 microns) and allowing the pump to run at this pressure for a minimum of two hours.

Repeat the proper amount of refrigerant charge per the manufacturer's recommendations. Record the amount of refrigerant by weight charged into the system for each circuit recorded on the drawings. Provide a minimum 14-pound on tags and attach tags to the liquid line near the condensing unit. Refrigerant shall be supplied by the HVAC Contractor.

7. TEMPERATURE CONTROLS A. GENERAL REQUIREMENTS Provide a complete system of temperature controls including controllers, control panels, thermostats, sensors, time switches, override timers, actuators, relays, and wiring required to provide the desired control systems specified on the drawings.

Submit shop drawings of equipment provided for temperature control. Submit operation and maintenance data, including trouble-shooting maintenance guide, step-by-step procedures indexed for each controller and thermostat function, inspection period, cleaning methods and materials, and calibration tolerances.


Provide integrated wiring diagrams showing interconnections between field installed equipment and package wiring furnished with the HVAC equipment. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller.

Provide supervision and on-job checking service as required to ensure that installation

4. Cx TESTS COMMON TO HVAC SYSTEMS
- Comply with construction checklist requirements, including installation checks, startup, and performance tests requirements for HVAC systems and equipment.
  - Measure capacities and effectiveness of systems, assemblies, subsystems, equipment and components, including operational and control functions, to verify compliance with acceptance criteria.
  - Coordinate schedule with, and perform Cx activities at the direction of CxA.
  - Provide technicians, instrumentation, tools, and equipment to perform and document the following:
    - Construction checklist verification tests.
    - Construction checklist verification tests demonstrations
    - Cx test demonstrations.
5. START-UP DOCUMENTATION COMMON TO ALL SYSTEMS
- The following Start-Up Documentation (Checklists and Tests) shall be considered common to all systems:
    - Checkout shall proceed from lower level devices to larger components to the entire system operation.
    - Verify labeling is affixed per specification and visible.
    - Verify prerequisite procedures are done.
    - Inspect for damage and ensure none is present.
    - Verify system is installed per the manufacturer's recommendations.
    - Verify system has undergone Start-Up per the manufacturer's recommendations.
    - Verify that access is provided for inspection, operation and repair.
    - Verify that access is provided for eventual replacement of the equipment.
    - Verify that record drawings, submittal data and O&M documentation accurately reflect the installed systems.
    - Verify all gauges and test ports are provided as required by contract documents and manufacturer's recommendations.
    - Verify all recorded nameplate data is accurate.
    - Verify that the installation ensures safe operation and maintenance.
    - Verify all rotating and moving parts are properly lubricated.
    - Verify specified replacement material/stock has been provided as required by the Contract Documents.
    - Verify all monitoring and ensure all alarms are active and set per requirements.
6. MECHANICAL IDENTIFICATION
- Include all applicable "Start-Up Checks Common to All Systems".
  - Start-Up Checks: Perform the following checks:
    - Verify all valve tags, piping, duct, and equipment labeling corresponds with drawings and indexes and meets requirements specified. Correct any deficiencies for all piping and duct system.
    - Adjusting: Relocate any mechanical identification device which has become visually blocked by work of this division or other divisions.
    - Cleaning: Clean face of identification devices, and glass frames of valve charts.
7. MECHANICAL INSULATION
- Include all applicable "Start-Up Checks Common to All Systems".
  - Start-Up Checks: Examine all piping, systems and equipment specified to be insulated.
    - Ensure quality of insulation. Patch and repair all insulation damaged after installation.
    - Ensure the integrity of vapor barrier around all cold surfaces.
8. PIPING GENERAL
- Include all applicable "Start-Up Checks Common to All Systems".
  - Start-Up Checks: These procedures apply to all installed piping systems, including underground site utilities.
    - Inspect all piping for proper installation, adequate support (with appropriate vibration isolation where applicable) and adequate isolation valves for required service.
    - Provide notifications of pipe-cleaning and flushing activities.
    - Flush and clean all piping and clean all strainers. Provide documentation of all related procedures.
    - Ensure adequate drainage is provided at low points and venting is provided at high points.
    - Ensure facilities to effectively drain and fill the system are in place.
    - Ensure air is thoroughly removed from the system as applicable.
    - Provide notification of pressure testing.
    - Pressure and/or leak test all applicable systems in accordance with the requirements in the applicable Division 23 specification.
    - Sterilize applicable piping systems as specified in the individual sections and as required by regulatory authorities.
    - Submit pressure test reports that document the pressure testing results with certification of the results. Include drawings/diagrams indicating sections of pipe that are tested with the corresponding report.
    - Set and adjust fill, pressure, or level controls to the required setting.
9. AC MOTORS
- Include all applicable "Start-Up Checks Common to All Systems".
  - Start-Up Checks: Perform the following checks during start-up and as specified in manufacturer's instructions:
    - Verify proper alignment, installation, and rotation.
    - Verify properly sized overloads are in place.
  - Start-Up Tests: Perform the following tests, measurements, or procedures during start-up and as specified in the manufacturer's instruction:
    - Measure voltage available to all phases. Measure amps and RPM after motor has been placed in operation and is under load.
    - Record all motor nameplate data.
10. PACKAGED HEATING AND COOLING UNITS
- Include all applicable "Start-Up Checks Common to All Systems".
  - Refer to AC Motors in this section.
  - General: Provide the services of a factory-authorized service representative to test and inspect unit installation, provide startup service, and to demonstrate and train Owner's maintenance personnel is required by the Owner.
  - Start-Up Checks: Perform the following inspections/checks during start-up:
    - Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
    - Install new filters after start-up.
11. TERMINAL UNITS
- Include all applicable "Start-Up Checks Common to All Systems".
  - Start-Up Checks: Perform the following inspections/checks during start-up:
    - After construction is completed, including painting if applicable, clean unit exposed surfaces.
    - Clean factory-finished surfaces. Repair any marred or scratches surfaces with manufacturer's touch-up paint.
    - Verify adequate access for maintenance.
    - Check power and control voltages.
    - Check rotation of fan where applicable.
    - Check operation of water leak sensors.
    - Check calibration and operation of the controlling elements.
    - Check control valves for required close-off and full position.
    - Install new filter units for terminals requiring same.
12. FANS
- Include all applicable "Start-Up Checks Common to All Systems".
  - General: Provide the services of a factory-authorized service representative to test and inspect exhaust fan installation, provide startup service, and to demonstrate and train Owner's maintenance personnel is required by the Owner.
  - Start-Up Checks: Perform the following inspections/checks during start-up:
    - Inspect the field assembly of components and installation of the units, piping, ductwork, and electrical connections.
    - Clean unit cabinet interiors to remove foreign material and construction dirt and dust. Vacuum clean fan wheel, fan cabinet, coils entering air face. Ensure volatile irritants are contained and kept out of occupied spaces.
    - Adjust and lubricate dampers and linkages for proper damper operation.
    - Verify the unit is secure on mountings and supporting devices and connections for ductwork, and electrical are complete. Verify proper thermal overload protection is installed in motors, starters, and disconnects.
    - Ensure vibration isolation integrity is maintained with the fan installation and associated connections.
    - Lubricate bearings, pulleys, belts, and other moving parts with factory-recommended lubricants.
    - Stroke all dampers to ensure free and full travel.
13. DUCTWORK ACCESSORIES
- Include all applicable "Start-Up Checks Common to All Systems".
  - Start-Up Checks: Perform the following checks during start-up and as specified:
    - Cleaning: Clean factory-finished surfaces. Repair any marred or scratches surfaces with manufacturer's touch-up paint.
  - Start-Up Tests: In addition to specifications, perform the following as a minimum:
    - Operate installed ductwork accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories, as required to obtain proper operation and leak proof performance.
    - Label access doors in accordance with Division 21 Section "Mechanical Identification"
    - Adjusting: Adjust ductwork accessories for proper settings, install fusible links in fire dampers and adjust for proper action.

END OF SECTION 23

NOTE: EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS & SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.	SPECIAL INSPECTIONS OWNER SHALL SUBCONTRACT WITH A NEW YORK STATE REGISTERED SPECIAL INSPECTION AGENCY TO PERFORM THE REQUIRED SPECIAL INSPECTIONS FOR THE MECHANICAL, PLUMBING AND FIRE PROTECTION SYSTEMS AS REQUIRED BY THE NEW YORK CITY BUILDING CODE. OWNER SHALL PAY AN EXPEDITER TO FILE ALL REQUIRED FORMS.	NEW YORK ALTERATION WARNING STATEMENT: IT IS A VIOLATION OF THE NEW YORK EDUCATION LAW ARTICLE 140, SECTION 2709 FOR ANY PERSON, UNLESS THE INDIVIDUAL IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM THEIR SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.
TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 NEW YORK STATE ENERGY CODE.	JOSHUA N. HOVER	BUILDING DEPARTMENT FILING NOTE: THIS PLAN IS APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.



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SEAL SIGNATURE:



03/25/2025

1	HNY	2025-03-24	IFC Set
A	HNY	2025-03-03	Addendum A
	HNY	2024-11-19	Permit Set
	HNY	2024-10-21	75% SET
NO.	BY	DATE	DESCRIPTION



SHAKE SHACK GREECE

2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623

IFC SET

MECHANICAL SPECIFICATIONS

DRAWN BY: EHC

CHECKED BY: JH

JOB NO: 20240158.00

M592

ROOFTOP UNIT CONTROL MATRIX				
CONTROL FEATURE	UNITS	(E) RTU-1 SETPOINT OR Y/N	(E) RTU-2 SETPOINT OR Y/N	NOTES
<b>CONTROL STRATEGY</b>				
SPACE TEMPERATURE CONTROL		Y	Y	
<b>HEATING AND COOLING SET POINTS</b>				
COOLING MODE ENABLE - SPACE TEMPERATURE - OCCUPIED SETPOINT	"F DB	75	75	
COOLING MODE ENABLE - SPACE TEMPERATURE - UNOCCUPIED SETPOINT	"F DB	80	80	
COOLING - SUPPLY AIR TEMPERATURE SETPOINT	"F DB	55	55	
HEATING MODE ENABLE - SPACE TEMPERATURE - OCCUPIED SETPOINT	"F DB	70	70	
HEATING MODE ENABLE - SPACE TEMPERATURE - UNOCCUPIED SETPOINT	"F DB	60	60	
HEATING - SUPPLY AIR TEMPERATURE SETPOINT	"F DB	85	85	
DEAD BAND MINIMUM HEATING AND COOLING TEMPERATURE SETPOINT DIFFERENCE	"F DB	5	5	
DEHUMIDIFICATION SETPOINT HUMIDITY SENSOR FEEDBACK	%RH	50	50	
DEHUMIDIFICATION - REHEAT CONTROL - SUPPLY AIR TEMPERATURE SETPOINT	"F DB	70	70	F
<b>PROGRAMMED CONTROL FEATURES</b>				
HVAC SYSTEM OCCUPIED/UNOCCUPIED MODE - PROGRAMMABLE THERMOSTAT		Y	Y	B
OPTIMUM START SEQUENCE		Y	Y	
<b>EQUIPMENT COMPONENTS, ACCESSORIES AND CONTROL FEATURES</b>				
COOLING COIL (DX - MODULATING CAPACITY)		Y	Y	K
DEHUMIDIFICATION - MODULATING HOT GAS REHEAT		Y	Y	
HEATING - NATURAL GAS - MODULATING		Y	Y	K
RETURN AIR PATH WITH MOTORIZED RETURN AIR DAMPER FOR UNOCCUPIED OPERATION		Y	Y	D, T
OUTSIDE AIR DAMPER - MOTOR OPERATED		Y	Y	J, T
RELIEF/EXHAUST AIR DAMPER - BAROMETRIC		Y	N	
RELIEF/EXHAUST AIR DAMPER - MOTOR OPERATED		N	Y	J
OUTSIDE SUPPLY AIR AIRFLOW MONITORING		Y	Y	F
REMOTE COMBINATION TEMPERATURE AND HUMIDITY SENSOR		Y	Y	B
INTEGRATED ECONOMIZER - DIFFERENTIAL ENTHALPY ENABLE (OA ENTHALPY < RA ENTHALPY)	BTU/LB	26	26	U
<b>SUPPLY FAN CONTROL METHODS</b>				
ON DURING OCCUPIED MODE		Y	Y	
CYCLE WITH LOADS DURING UNOCCUPIED HOURS		Y	Y	
VARIABLE VOLUME - STAGED FAN CONTROL IN RESPONSE TO ACTIVE COOLING COIL STAGES		Y	Y	K, V
<b>SAFETIES, INTERLOCKS, AND ALARMS</b>				
GAS VALVE SAFETY		Y	Y	F
RETURN AIR SMOKE DETECTOR - SAFETY SHUTDOWN		Y	Y	E
LOW LIMIT FREEZE/STAT - FREEZE PROTECTION SAFETY SHUTDOWN		Y	Y	F
DIFFERENTIAL PRESSURE SWITCH - FILTER CHANGE ALARM		Y	Y	F
FIRE ALARM CONTROL PANEL - SAFETY SHUTDOWN/INTERLOCK		Y	Y	
OUTSIDE AIR DAMPER END SWITCH - SAFETY SHUTDOWN		Y	Y	S
KITCHEN EXHAUST SYSTEM INTERLOCK		Y	Y	L

DIV. 23 CONTRACTOR SHALL PROVIDE CONTROL PANEL(S), WIRING, THERMOSTAT(S), TEMPERATURE SENSOR(S), HUMIDISTAT(S), AND/OR CO2 SENSOR(S) WHERE SHOWN ON THE DRAWINGS AND AS REQUIRED TO FACILITATE THE SCHEDULED CONTROL MODULES AND SEQUENCES OF OPERATION. EACH UNIT SHALL CONTROL BASED ON ITS OWN INTERNAL SAFETIES, TIME DELAYS, AND SEQUENCES UNLESS NOTED OTHERWISE. COORDINATE WITH OWNER FINAL BUILDING AND EQUIPMENT SCHEDULES DURING STARTUP. REFERENCE DIVISION SPECIFICATIONS FOR INDIVIDUAL DEVICE REQUIREMENTS.

NOTES:  
 A. DIVISION 23 CONTRACTOR SHALL PROVIDE DEVICE.  
 B. DURING UNOCCUPIED OPERATION, EXHAUST AND OUTSIDE AIR DAMPERS SHALL CLOSE. THE RETURN AIR DAMPER SHALL OPEN TO PERMIT RECIRCULATION OF INDOOR AIR THROUGH UNIT.  
 C. DIVISION 28 CONTRACTOR SHALL PROVIDE DEVICE.  
 D. DEVICE SHALL BE FACTORY MOUNTED AND PRE-WIRED FOR OPERATION SUBJECT TO THE ONBOARD CONTROLLER.  
 E. DAMPER SHALL BE CLOSED DURING UNOCCUPIED MODE.  
 F. UNITARY CONTROLLER SHALL MODULATE AND/OR CYCLE SUPPLY FAN SPEED AND COIL CAPACITY SUBJECT TO THE INTERNAL SAFETIES AND SEQUENCES TO MAINTAIN SCHEDULED SETPOINTS.  
 G. INTERLOCK RTU WITH KITCHEN EXHAUST HOOD SYSTEM(S) TO SHUT DOWN UPON SIGNAL FROM HOOD FIRE EXTINGUISHING SYSTEM. INTERLOCK RTU WITH KITCHEN EXHAUST FAN TO ENERGIZE WHEN HOOD SYSTEM IS ENERGIZED FOR PRESSURIZATION.  
 H. UNITS THAT PROVIDE VENTILATION AIR TO MULTIPLE ZONES AND OPERATE IN CONJUNCTION WITH ZONE HEATING AND COOLING SYSTEMS SHALL NOT USE HEATING OR HEAT RECOVERY TO WARM SUPPLY AIR TO A TEMPERATURE GREATER THAN VALUE INDICATED WHEN THE OUTSIDE AIR TEMPERATURE EXCEEDS 75F.  
 I. VENTILATION ONLY MODE PROVIDES OUTSIDE AIR DIRECTLY TO SPACE WITHOUT HEATING OR COOLING WHEN OUTDOOR AIR CONDITIONS ARE FAVORABLE. VENTILATION ONLY MODE CAN BE INTERRUPTED ON A CALL FOR DEHUMIDIFICATION.  
 J. PROVIDE END SWITCH ON THE OUTSIDE AIR DAMPER AND INTERLOCK THE SWITCH WITH THE SUPPLY FAN TO KEEP IT FROM STARTING IF END SWITCH IS NOT MADE.  
 K. DURING UNOCCUPIED OPERATION, OUTSIDE AIR DAMPERS SHALL CLOSE AND RETURN AIR DAMPER SHALL MODULATE TO FULL OPEN.  
 L. IF SETPOINT VALUE IS LISTED, IT INDICATES ECONOMIZER HIGH-LIMIT SHUTOFF. UNIT SHALL BE IN ECONOMIZER IF CONDITIONS ARE LESS THAN SETPOINT. THE FOLLOWING SENSORS SHALL DETERMINE ECONOMIZER ON POINT: OUTSIDE AIR TEMPERATURE; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE. RETURN AIR TEMPERATURE; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE. OUTSIDE AIR HUMIDITY; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE. RETURN AIR HUMIDITY; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.  
 M. PROVIDE STAGED FAN CONTROL WITH MINIMUM 2 FAN SPEEDS. LOW SPEED SHALL NOT EXCEED 66% OF FULL SPEED AND SHALL DRAW NO MORE THAN 40% OF FAN POWER AT FULL SPEED.

PROJECT DESIGN CONDITIONS																
CLIMATE CONDITIONS					BUILDING OPERATING HOURS:					SEQUENCE OF OPERATION						
WEATHER STATION: GREATER ROCHESTER INTL. NY, USA					MONDAY - FRIDAY: TBD BY OWNER					A. FAN COIL UNIT CONTROL						
CLIMATE ZONE: 5A					SATURDAY: TBD BY OWNER					During occupied hours, operate fan coil unit supply fan continuously and open outdoor air damper to maintain minimum ventilation. Cycle stage(s) of DX cooling and electric heating to maintain room thermostat set point (75 degrees Fahrenheit cooling, 70 degrees Fahrenheit heating). Duct mounted smoke detectors shall shutdown unit upon alarm.						
HEATING (DB): 99.6% 2.2 "F"					SUNDAY: TBD BY OWNER					During unoccupied hours, cycle the fan coil unit supply fan and cooling or heating system to maintain unoccupied setback temperature set points. Outdoor air damper shall be closed during unoccupied hours.						
COOLING (DB/MCWB): 0.4% 88.9 "F/ 73.0 "F"					HOLIDAY: TBD BY OWNER					Connect the Outdoor air damper to the same time clock as the restroom exhaust.						
SPACE / UNIT DESCRIPTION	COOLING / DE-HUMIDIFICATION					HEATING					ZONE VENTILATION RESET					
	OCC	UNOCC	MAX RH %	MIN RH %	REFR	OCC	UNOCC	MIN RH %	MAX RH %	CONTROL METHOD	BASE PPM	MAXIMUM PPM	M-F	SAT	SUN	NOTES
DINING AREAS	75	80	50%	NA	70	80	NA	NA	NA	NA	NA	NA	TBD	TBD	TBD	A, B, C
OFFICE	75	80	50%	NA	70	80	NA	NA	NA	NA	NA	NA	TBD	TBD	TBD	A, B, C
MECHANICAL ROOM	NA	NA	NA	NA	70	80	NA	NA	NA	NA	NA	NA	TBD	TBD	TBD	A, B, C
KITCHEN/BOH	75	80	50%	NA	70	80	NA	NA	NA	NA	NA	NA	TBD	TBD	TBD	A, B, C

NOTES:  
 A. ZONE LEVEL SET POINT CONDITIONS SHALL BE AS SCHEDULED UNLESS OTHERWISE SCHEDULED OR NOTED ON THE DRAWINGS FOR ROOM SPECIFIC SPACE CONDITIONS.  
 B. ZONE LEVEL OCCUPANCY HOUR SCHEDULE SHALL BE PER BUILDING OPERATING HOURS UNLESS OTHERWISE SCHEDULED.  
 C. ZONE LEVEL CONTROLS SHALL BE CAPABLE OF OPERATING WITH INDEPENDENT OCCUPANCY SCHEDULES.

HEAT PUMP CONDENSING UNIT SCHEDULE																	
LANDLORD PROVIDED EQUIPMENT. SCHEDULE FOR REFERENCE ONLY																	
MARK	SERVICE	MANUFACTURER	MODEL	REFR TYPE	COOLING CAPACITY				HEATING CAPACITY				MCA	MOCP	VIPH	WEIGHT (LBS)	NOTES
					TH (MBH)	AMBIENT (DB)	MIN EFF (SEER)	CAP (MBH)	AMBIENT (DB)	MIN EFF COP 47°F							
(E) CU-1	(E) FCU-1	CARRIER	38MARBQ18A3	R410A	10.4	95.0	20.0	9.7	2.2	3.4	18	25	208/1	102.5	A - H		

\* EQUIPMENT SHALL BE OBTAINED THROUGH SHAKE SHACK NATIONAL ACCOUNT. REFER TO 1002 / VENDOR LIST FOR MORE INFORMATION. MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:  
 A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.  
 B. EQUIPMENT CAPACITY SCHEDULED IS MINIMUM CAPACITY THAT MUST BE PROVIDED AT AMBIENT TEMPERATURE INDICATED.  
 C. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT QUANTITY AND SIZE OF REFRIGERANT PIPING.  
 D. PROVIDE LIQUID LINE FILTER DRYER AND SIGHT GLASS.  
 E. PROVIDE PREFABRICATED EQUIPMENT SUPPORT RAILS.  
 F. DISCONNECT SWITCH FURNISHED BY DIVISION 26 CONTRACTOR.  
 G. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.  
 H. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.

AIR CURTAIN SCHEDULE														
LANDLORD PROVIDED EQUIPMENT. SCHEDULE FOR REFERENCE ONLY														
MARK	SERVICE AREA	MANUFACTURER	MODEL	UNIT SPECS			MOTOR	VIPH#2	NOTES					
				LENGTH (IN)	MAX AIRFLOW	HEATING CAPACITY (KW)								
AC-1	SERVICE ENTRY	MARS	STD2	36	1379	N/A	1/2	115/1	A-F					

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:  
 A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.  
 B. MOUNT UNIT PER MANUFACTURER'S RECOMMENDATIONS TO FACE OF WALL AND SUPPORT VERTICALLY.  
 C. PROVIDE INTEGRAL STARTER AND DISCONNECT SWITCH.  
 D. REFER TO SEQUENCE OF OPERATION FOR UNIT CONTROLS.  
 E. PROVIDE AIR CURTAIN WITH NORMALLY CLOSED DOOR LIMIT SWITCH FOR INSTALLATION ON DOOR. THE AIR CURTAIN SHALL ENERGIZE WHEN DOOR OPENS.  
 F. PROVIDE WITH DELAY MICROSWITCH WITH ADJUSTABLE DELAY TIMERS PRE MOUNTED IN THE AIR CURTAIN CONTROL PANEL.

FAN COIL UNIT SCHEDULE (HEAT PUMP)																							
LANDLORD PROVIDED EQUIPMENT. SCHEDULE FOR REFERENCE ONLY																							
MARK	MFR	MODEL	SUPPLY FAN					COOLING COIL					HEAT PUMP HEATING COIL					MIN	ELECTRICAL	WEIGHT (LBS)	NOTES		
			CFM	ESP (IN)	NOM HP	TH (MBH)	SH (MBH)	EAT (°F DB)	REFR (°F WB)	MIN OUT (MBH)	AMBIENT (DB)	EAT (°F DB)	REFR (°F WB)	MIN OUT (MBH)	AMBIENT (DB)	EAT (°F DB)	REFR (°F WB)						
(E) FCU-1	CARRIER	40MBCQ18	420	0.025	0.061	10.4	9.0	76.6	83.7	57.0	55.5	R410A	9.7	2.2	63.5	85	40	208/1	N/A	N/A	NF	45	A - I

\* EQUIPMENT SHALL BE OBTAINED THROUGH SHAKE SHACK NATIONAL ACCOUNT. REFER TO 1002 / VENDOR LIST FOR MORE INFORMATION. MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:  
 A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.  
 B. ASSOCIATED CONDENSING UNIT SHALL BE BY THE SAME MANUFACTURER.  
 C. FOR COOLING, EQUIPMENT SIZED FOR 96°F AMBIENT TEMPERATURE. HEAT PUMP HEATING CAPACITY BASED ON AMBIENT TEMPERATURE LISTED.  
 D. PROVIDE UNIT WITH CLEANABLE AIR FILTERS.  
 E. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT WITH STAGED HEATING AND COOLING CAPABILITY AS REQUIRED FOR OPERATION OF HEATING AND COOLING CONTROLS.  
 F. DISCONNECT SWITCH FURNISHED BY DIVISION 26 CONTRACTOR.  
 G. PROVIDE SINGLE POINT POWER CONNECTION.  
 H. PROVIDE WITH SPRING VIBRATION ISOLATION AND ALL-THREAD HANGING RODS.  
 I. REFERENCE PLUMBING PLANS FOR CONDENSATE DRAIN PIPING FROM UNIT.

SEQUENCE OF OPERATION														
A. FAN COIL UNIT CONTROL														
During occupied hours, operate fan coil unit supply fan continuously and open outdoor air damper to maintain minimum ventilation. Cycle stage(s) of DX cooling and electric heating to maintain room thermostat set point (75 degrees Fahrenheit cooling, 70 degrees Fahrenheit heating). Duct mounted smoke detectors shall shutdown unit upon alarm.														
During unoccupied hours, cycle the fan coil unit supply fan and cooling or heating system to maintain unoccupied setback temperature set points. Outdoor air damper shall be closed during unoccupied hours.														
Connect the Outdoor air damper to the same time clock as the restroom exhaust.														
B. KITCHEN EXHAUST FAN CONTROL														
Kitchen exhaust fan shall be energized through on-off switches at the associated exhaust hoods or cooking equipment or through a master kitchen ventilation control panel as indicated on the drawings.														
Kitchen fans shall be interlocked to operate with cooking appliances, make-up air and other air-handling equipment providing fresh air to the kitchen area as noted or scheduled on the drawings.														
C. ROOFTOP UNIT CONTROL														
Refer to RTU CONTROL MATRIX on Sheet M601 for required rooftop unit control options.														
D. RESTROOM EXHAUST FAN (EF-1) CONTROL														
Operate exhaust fans continuously during occupied hours and shut down during unoccupied hours, providing a 7-day timedlock to switch each system between occupied and unoccupied operation.														
E. AIR CURTAIN CONTROL														
Interlock air curtain with door limit switch to energize when the door opens.														
F. ELECTRIC UNIT HEATER CONTROL														
Unit heater shall be activated by unit mounted thermostat to maintain room temperature setpoint (60 deg F).														

AIR CURTAIN SCHEDULE														
LANDLORD PROVIDED EQUIPMENT. SCHEDULE FOR REFERENCE ONLY														
MARK	SERVICE AREA	MANUFACTURER	MODEL	UNIT SPECS			MOTOR	VIPH#2	NOTES					
				LENGTH (IN)	MAX AIRFLOW	HEATING CAPACITY (KW)								
AC-1	SERVICE ENTRY	MARS	STD2	36	1379	N/A	1/2	115/1	A-F					

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:  
 A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.  
 B. MOUNT UNIT PER MANUFACTURER'S RECOMMENDATIONS TO FACE OF WALL AND SUPPORT VERTICALLY.  
 C. PROVIDE INTEGRAL STARTER AND DISCONNECT SWITCH.  
 D. REFER TO SEQUENCE OF OPERATION FOR UNIT CONTROLS.  
 E. PROVIDE AIR CURTAIN WITH NORMALLY CLOSED DOOR LIMIT SWITCH FOR INSTALLATION ON DOOR. THE AIR CURTAIN SHALL ENERGIZE WHEN DOOR OPENS.  
 F. PROVIDE WITH DELAY MICROSWITCH WITH ADJUSTABLE DELAY TIMERS PRE MOUNTED IN THE AIR CURTAIN CONTROL PANEL.

FAN SCHEDULE														
MARK	SERVICE	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	DRIVE	MIN HP	FAN RPM	VFD (Y/N)	ELECTRICAL			NOTES
											WPH	DISC	STARTER	
EF-1	TOILETS	GREENHECK	ROOF	G-097-VG	150	0.5	DIRECT	1/4	1236	N	120/1	NF	N/A	A-E

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:  
 A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.  
 B. PROVIDE WITH MINIMUM 12" HIGH ROOF CURB, BIRDSCREEN AND BACKDRIFT DAMPER.  
 C. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.  
 D. INTERLOCK FAN OPERATION WITH TIME CLOCK.  
 E. PROVIDE WITH MANUFACTURER'S FAN SPEED CONTROLLER FOR BALANCING PURPOSES.

ROOFTOP UNIT SCHEDULE (DX COOLING, NATURAL GAS HEAT)																														
LANDLORD PROVIDED EQUIPMENT. SCHEDULE FOR REFERENCE ONLY																														
MARK	MANUFACTURER	MODEL	NOMINAL TONS	UNIT TYPE	COOLING COIL					GAS FIRED HEAT EXCHANGER					MIN	ELECTRICAL	WEIGHT (LBS)	NOTES												
					CFM	ESP (IN)	HP	VFD (Y/N)	TH (MBH)	SH (MBH)	EAT (°F DB)	REFR (°F WB)	MIN OUT (MBH)	AMBIENT (DB)					EAT (°F DB)	REFR (°F WB)	MIN OUT (MBH)	AMBIENT (DB)	EAT (°F DB)	REFR (°F WB)						
(E) RTU-1	CAPTIVEAIRE	CAS-HVAC21-150-18-10T	10	SINGLE ZONE	2,600	0.8	3	Y	123.4	79.7	80.4	66.6	52.5	51	R410A	18.6	3	117.5	143.6	81	43.9	85	2	1000	209/3	80	70	FUSED	1963	A-O
(E) RTU-2	CAPTIVEAIRE	CAS-HVAC31-220-24-15T	15	SINGLE ZONE	4,500	0.8	5	Y	160.3	115.4	79.7	65.6	55.4	53.8	R410A	18.8	3	160.8	245.9	81	51.9	85	2	1200	209/3	79.2	90	FUSED	2693	A-O

MODEL NUMBERS AND NOMINAL TONS LISTED SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER, MODEL NUMBERS, OR NOMINAL TONS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:  
 A. REFER TO ROOFTOP UNIT CONTROL MATRIX FOR ADDITIONAL UNIT FEATURES, COMPONENTS, MODULES, ACCESSORIES, AND CONTROLS THAT SHALL BE PROVIDED WITH THE EQUIPMENT.  
 B. EQUIPMENT SIZED FOR 96°F AMBIENT TEMPERATURE.  
 C. PROVIDE 2" MERV 8, EFFICIENT PLEATED THROWAWAY AIR FILTERS.  
 D. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.  
 E. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.  
 F. PROVIDE SINGLE POINT POWER CONNECTION.  
 G. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.  
 H. PROVIDE 125 VAC, 20 AMP DUPLEX CONVENIENCE RECEPTACLE MOUNTED TO UNIT READY FOR FIELD WIRING WITH A COVER UL LISTED FOR WET AND DAMPER LOCATIONS WHEN IN USE.  
 J. SPECIFIED FAN ESP ACCOUNTS FOR DUCT LOSSES EXTERNAL TO UNIT.  
 K. PROVIDE MOTOR HORSEPOWER TO OVERCOME INTERNAL UNIT STATIC PRESSURE DROP PLUS SPECIFIED EXTERNAL STATIC PRESSURE DROP. NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE REQUIRED BHP.  
 L. PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 29 INCHES ABOVE FINISHED ROOF SURFACE. PROVIDE SLOPED CURB IF NEEDED TO MATCH ROOF SLOPE. COORDINATE WITH ROOF INSULATION THICKNESS AND ROOF TAPER AT INSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.  
 M. SCHEDULED WEIGHT IS THE MAXIMUM ALLOWABLE OPERATING WEIGHT OF THE EQUIPMENT ONLY.  
 N. COOLING COIL LAT IS LEAVING AIR TEMPERATURE OF COIL.  
 O. PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.  
 P. PROVIDE HEATER TO MEET OR EXCEED SCHEDULED MINIMUM MBH OUTPUT. NOMINAL INPUT IS BASED ON LISTED MANUFACTURER'S STANDARD PRODUCT. COORDINATE EQUIPMENT GAS LOAD WITH PLUMBING CONTRACTOR IF DIFFERENT FROM THAT SCHEDULED. MEET MINIMUM EFFICIENCY SCHEDULED.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE														
MARK	MANUFACTURER	SERVICE	MODEL	CONSTRUCTION MATERIAL	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN)	MAX NC	NOTES					
										CEG	CRG	CSD2	CSD3	WBR
CEG	E.H. PRICE	EXHAUST GRILLE W/ DAMPER	80D	STEEL	EGGCRATE	SURFACE	12x12	30	A B C F G H					
CRG	E.H. PRICE	RETURN GRILLE	80	STEEL	EGGCRATE	LAY-IN	24x24	30	A B C F H					
CSD2	E.H. PRICE	SUPPLY DIFFUSER	SCD	STEEL	SQUARE CONE	LAY-IN	24x24	30	A B C F H K					
CSD3	E.H. PRICE	SUPPLY DIFFUSER	PDDR	STEEL	PERFORATED	LAY-IN	24x24	30	A B C F H					
WBR	E.H. PRICE	SUPPLY REGISTER W/ DAMPER	520D	STEEL	LOUVERED FACE	WALL OR DUCT	(SEE PLANS)	30	A B C D E F G H					

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:  
 A. EQUIPMENT FURNISHED AND INSTALLED PER THE EQUIPMENT RESPONSIBILITY SCHEDULE.  
 B. NECK SIZE SHOWN ON DRAWINGS. PROVIDE BRANCH DUCT TO MATCH NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.  
 C. DIFFUSERS SHALL BE PREFINISHED TO MATCH CEILING/WALL/EXPOSED DUCT COLOR (COORDINATE WITH ARCHITECT).  
 D. FRONT BLADES PARALLEL TO LONG DIMENSION.  
 E. DOUBLE DEFLECTION BARS SHALL BE ADJUSTABLE.  
 F. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION, COORDINATE WITH ARCHITECTURAL REFLECTED CEILING/WALL PLAN.  
 G. PROVIDE OPPOSED BLADE DAMPER ADJUSTABLE FROM FACE OF DEVICE.  
 H. PROVIDE DIFFUSERS, LINEAR SLOTS, AND GRILLES WITH NO EXPOSED MOUNTINGS SCREWS.  
 I. CONTRACTOR SHALL PROVIDE REMOTE CABLE OPERATED VOLUME DAMPER BY METROPOLITAN AIR TECHNOLOGIES MODEL RT-250 WITH EXTERNAL WORM GEAR OPERATOR OR EQUIVALENT YOGA REGULATOR BUTTERFLY DAMPER WITH 270-275 CONTROLLER. OPERATOR SHALL HAVE A SQUARE DRIVE FOR 1/4" NUT DRIVER. DAMPER ASSEMBLY SHALL INCLUDE GALVANNEED STEEL TUBING, ROLLED BEAD STIFFENERS, REINFORCED BLADE. SELF LUBRICATING BEARING AND WORM GEAR MOUNTING PLATE. DAMPER SHALL BE INSTALLED IN BRANCH DUCT NOT INLET OF PLENUM DIFFUSER. (REF 20MS1)  
 K. 4-WAY THROW PATTERN UNLESS OTHERWISE INDICATED BY FLOW ARROWS ON DRAWINGS.  
 L. PROVIDE RAPID MOUNT FRAME FOR INSTALLATION IN HARD CEILING.

OUTSIDE AIR REQUIREMENTS, IMC-2018 (IP)															
SYSTEM DESIGNATION	SYSTEM TAB NAME OR LIST 'SINGLE'	SINGLE-ZONE SYSTEMS ONLY			MULTI-ZONE SYSTEMS ONLY			FLOOR AREA SERVED	SYSTEM AVERAGED AREA-BASED OUTDOOR AIR RATE	SYSTEM POPULATION	SYSTEM AVERAGED PEOPLE-BASED OUTDOOR AIR RATE	REQUIRED OA INTAKE FLOW [cfm]	REQUIRED DCV OA INTAKE FLOW [cfm]	DESIGN OA INTAKE FLOW [cfm]	NOTES
		ASSOCIATED VENTILATION ZONE	SINGLE ZONE SYSTEM	SINGLE ZONE WORST CASE ZONE AIR DISTRIBUTION EFFECTIVENESS [ε]	SYSTEM VENTILATION EFFICIENCY [εv]										
(E) RTU-1	MULTIZONE (E) RTU-1				0.92	1.238	0.153	56	7.50	661	N/A	1,000		1,000	ALL
(E) RTU-2	SINGLE ZONE	OPEN KITCHEN + BOH		0.80	1.117	0.120	22.34	7.50	377	N/A	1,200		1,200	ALL	
(E) FCU-1	SINGLE ZONE	OFFICE		0.80	64	0.060	2	5.00	17	N/A	40		40	ALL	
TOTALS												1,055	0	2,240	

GENERAL NOTES:  
 1. VENTILATION CALCULATIONS BASED ON IMC-2018.  
 2. SYSTEM POPULATION BASED ON MAX SEATING AND/OR CODE MAXIMUM VALUES.  
 3. SINGLE ZONE SYSTEMS (Vot + Voz). SYSTEM VENTILATION EFFICIENCY CALCULATION IS NOT REQUIRED FOR SINGLE ZONE SYSTEMS. WORST CASE AIR DISTRIBUTION EFFECTIVENESS



COMcheck Software Version COMcheckWeb  
Mechanical Compliance Certificate

Project Information

Energy Code: 2020 New York State Energy Conservation Construction Code  
Project Title: Shake Shack Greece - Mechanical  
Location: Greece, New York  
Climate Zone: 5a  
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Efficiency Packages

Description	Credit
High Performance SWH	1.0
Credits: 1.0 Required 1.0 Proposed	

Mechanical Systems List

Quantity System Type & Description

1 WH-1, WH-2, WH-3  
Gas Instantaneous Water Heater, Capacity: 0 gallons, Input Rating: 199 kBtu/h w/ Circulation Pump  
No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2020 New York State Energy Conservation Construction Code requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Eion Hindsman-Curry *Eion Hindsman-Curry* 10/4/2024  
Name - Title signature Date

Project Title: Shake Shack Greece - Mechanical Report date: 10/04/24  
Data filename: Page 1 of 5

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C404.3 [F111]	Heat traps installed on supply and discharge piping of non-circulating systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C404.4 [F125]	All piping insulated in accordance with section details and Table C403.11.3.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C404.6.1 [F121]	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
Project Title: Shake Shack Greece - Mechanical Report date: 10/04/24  
Data filename: Page 5 of 5



COMcheck Software Version COMcheckWeb  
Inspection Checklist

Energy Code: 2020 New York State Energy Conservation Construction Code

Requirements: 100.0% were addressed directly in the COMcheck software  
Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR3]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
Project Title: Shake Shack Greece - Mechanical Report date: 10/04/24  
Data filename: Page 2 of 5

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C404.6.1, C404.6.2 [PL3]	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C404.6.3 [PL7]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C404.7 [PL8]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
Project Title: Shake Shack Greece - Mechanical Report date: 10/04/24  
Data filename: Page 3 of 5

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2 [ME41]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.7.2 [ME115]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Exception: Requirement does not apply.
C403.7.5 [ME116]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.4.1 [ME63]	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C408.2.2 [ME3]	Air outlets and zone terminal devices have means for air balancing.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME123]	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)  
Project Title: Shake Shack Greece - Mechanical Report date: 10/04/24  
Data filename: Page 4 of 5

NOTE: EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS & SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.	SPECIAL INSPECTIONS OWNER SHALL SUBCONTRACT WITH A NEW YORK STATE REGISTERED SPECIAL INSPECTION AGENCY TO PERFORM THE REQUIRED SPECIAL INSPECTIONS FOR THE MECHANICAL, PLUMBING AND FIRE PROTECTION SYSTEMS AS REQUIRED BY THE NEW YORK CITY BUILDING CODE. OWNER SHALL PAY AN EXPEDITER TO FILE ALL REQUIRED FORMS.	NEW YORK ALTERATION WARNING STATEMENT: IT IS A VIOLATION OF THE NEW YORK EDUCATION LAW ARTICLE 140, SECTION 7209 FOR ANY PERSON, UNLESS THE INDIVIDUAL IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER AN ITEM IN ANY WAY IF AN ITEM BEARING THE SEAL OF AN ENGINEER IS ALTERED. THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM THEIR SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.	BUILDING DEPARTMENT FILING NOTE: THIS PLAN IS APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 NEW YORK STATE ENERGY CODE.		JOSHUA N. HOVER	



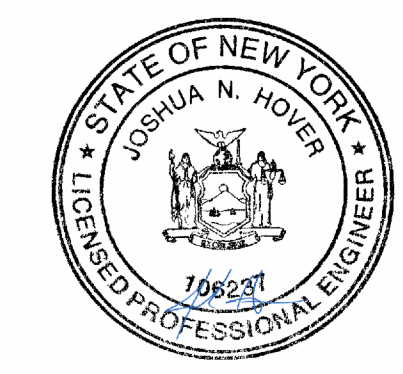
860 South Figueroa St.  
Los Angeles, CA 90017  
310.337.1090  
www.bergmeyer.com

CONSULTANTS:



240 WEST 37TH STREET, 3RD FLOOR  
NEW YORK, NY 10018  
TEL 212 413 8400  
www.hny-eng.com  
2460002092

SEAL SIGNATURE:



03/25/2025

1	HNY	2025-03-24	IFC Set
A	HNY	2025-03-03	Addendum A
	HNY	2024-11-19	Permit Set
	HNY	2024-10-21	75% SET

NO.	BY	DATE	DESCRIPTION
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SHAKE SHACK GREECE

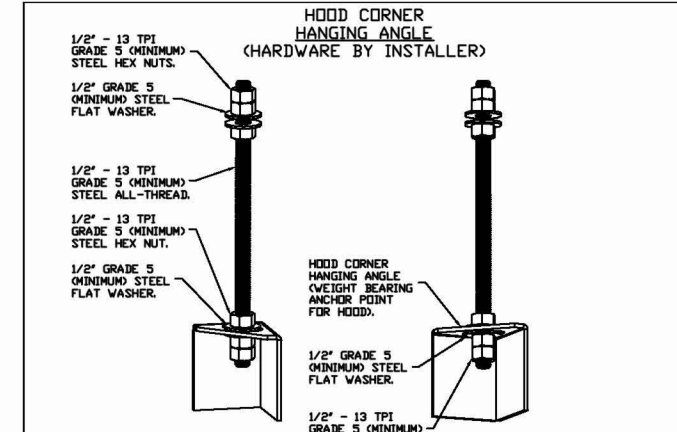
2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623

IFC SET

MECHANICAL ENERGY  
CODE COMPLIANCE

DRAWN BY: EHC  
CHECKED BY: JH  
JOB NO: 20240158.00

M630



**HANGING ANGLE DETAILS**

HOOD STYLE / MODEL	450 DEGREES cfm/ft.	600 DEGREES cfm/ft.	700 DEGREES cfm/ft.
CANOPY ND-2	150	200	250
CANOPY ND-2 w/ END PANELS	105	140	175
SLOPED SND-2	228	294	-
ISLAND ND-2W	269	300	350
ISLAND ND-2	346	422	475

**ETL HOOD LISTING DETAIL**

EXHAUST CFM = LENGTH OF HOOD X CFM/LINEAL FOOT  
 SUPPLY CFM = EXHAUST CFM X PERCENTAGE REQUIRED  
 TOTAL DUCT AREA (sq. in.) = 144 x CFM / FPM  
 DUCT LENGTH = TOTAL DUCT AREA / DUCT WIDTH

**CALCULATIONS UTILIZED**

CAPTIVE-AIRE HOODS BUILT IN COMPLIANCE WITH ETL LISTED UNDER ETL File number 3054804-001/002

**BUILDING CODES**

CAPTIVE-AIRE 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

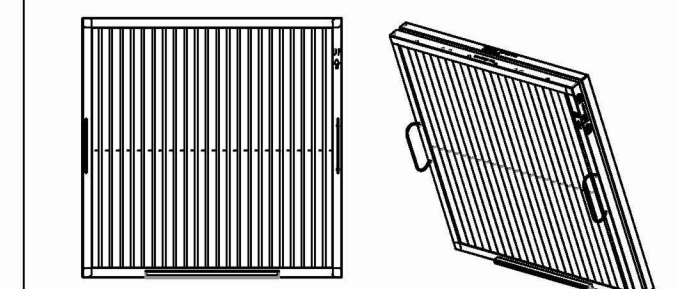
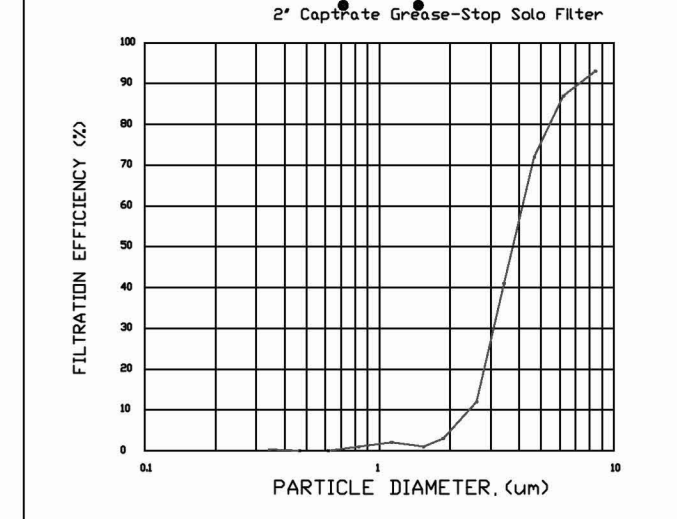
**CLEARANCE TO COMBUSTIBLES**

- INSTALLATION**
- ALL ELECTRICAL "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY ELECTRICAL CONTRACTORS.
  - ALL PLUMBING "FIELD" CONNECTIONS AND RELATED INTERCONNECTIONS BY PLUMBING CONTRACTORS.
  - HANGING BRACKETS LOCATED AND WELDED AS SHOWN ON PLANS. ALL OTHER HANGER MATERIALS PROVIDED BY INSTALLING CONTRACTORS.
  - ALL CONNECTIONS FROM CAPTIVEAIRE HOOD PER MECHANICAL CONTRACTORS PLANS.
  - COOKING EQUIPMENT TO SHUT OFF IN EVENT OF FIRE.
  - EXHAUST FANS TO TURN ON IN EVENT OF FIRE.
  - ALL LIGHT FIXTURES SHOWN INSTALLED BY CAPTIVEAIRE ARE FACTORY PROVIDED. INTERCONNECTIONS BETWEEN HOODS AND TO SWITCHES ARE BY ELECTRICAL CONTRACTOR.
  - LAMPS FOR LIGHT FIXTURES BY INSTALLING CONTRACTORS.
  - SEISMIC RESTRAINTS ARE RESPONSIBILITY OF INSTALLING CONTRACTOR.
  - INSTALLING CONTRACTORS ASSUME ALL RELATED RESPONSIBILITY FOR THE ACCURACY OF DIMENSIONS, DATA CONTAINED ON THESE DOCUMENTS FOR ACCURACY, INFORMATION, AND ADMINISTRATION OF CODE REQUIREMENTS IN EFFECT PRIOR TO ANY RELEASE FOR PRODUCTION OF EQUIPMENT SCHEDULE.

- ADDITIONAL**
- WRITTEN HOOD DIMENSIONS HAVE PRECEDENCE OVER SCALE.
  - SHOWN AND "APPROVED" COPIES OF THIS DOCUMENT SHALL BE KEPT ON SITE PRIOR TO COMMENCEMENT OF WORK.

**GENERAL NOTES**

1. FILTER COLLECTION EFFICIENCY



CaptiveAire Captrate Solo Filter  
 ETL Listed Grease Extracting Filters  
 Made From 430 Stainless Steel

**FILTER DETAIL**

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

**HOOD INFORMATION - JOB#7082977**

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S)				HOOD CONSTRUCTION	HOOD CONFIG			
										WIDTH	LENG	HEIGHT	DIA		CFM	VEL	SP	END TO END
1	Hood (Grill)	5430 ND-2	CAPTIVEAIRE	5' 0"	450 DEG	I	MEDIUM	150	750	9"	8"	4"	750	1500	-0.330"	430 SS WHERE EXPOSED	ALONE	ALONE
2	Hood (Fryer)	5430 ND-2	CAPTIVEAIRE	4' 0"	600 DEG	I	HEAVY	175	700	8"	8"	4"	700	1575	-0.375"	430 SS WHERE EXPOSED	ALONE	ALONE

**HOOD INFORMATION**

HOOD NO	TAG	TYPE	FILTER(S)		EFFICIENCY @ 7 MICRONS	QTY	LIGHT(S)		WIRE GUARD	LOCATION	SIZE	UTILITY CABINET(S)		FIRE SYSTEM PIPING	HOOD WEIGHT		
			QTY	HEIGHT			LENGTH	TYPE				SIZE	ELECTRICAL MODEL #			SWITCHES QUANTITY	
1	Hood (Grill)	CAPTRATE SOLO FILTER	3	20"	16"	85% SEE FILTER SPEC	2	RECESSED ROUND	NO					YES	441 LBS		
2	Hood (Fryer)	CAPTRATE SOLO FILTER	2	20"	20"	85% SEE FILTER SPEC	1	RECESSED ROUND	NO	LEFT	12"x54"x30"	TANK FS	4.0/4.0	SC-32010MA	1 LIGHT 1 FAN	YES	622 LBS

**HOOD OPTIONS**

HOOD NO	TAG	OPTION
1	Hood (Grill)	FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT. INSULATION FOR BACK OF HOOD. RISER SENSOR INSTALL 6IN PLEN. LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS. GFCI DUPLEX OUTLET, 20A 125V - HOOD FRONT LEFT - HORIZONTAL - DIST FROM END: 3.50 DIST FROM BOTTOM: 4.00. RIGHT WIDE VERTICAL END PANEL 42" TOP WIDTH, 36" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
2	Hood (Fryer)	FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT. RIGHT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. LEFT QUARTER END PANEL 23" TOP WIDTH, 0" BOTTOM WIDTH, 23" HIGH 430 SS. INSULATION FOR BACK OF HOOD. RISER SENSOR INSTALL 6IN PLEN.

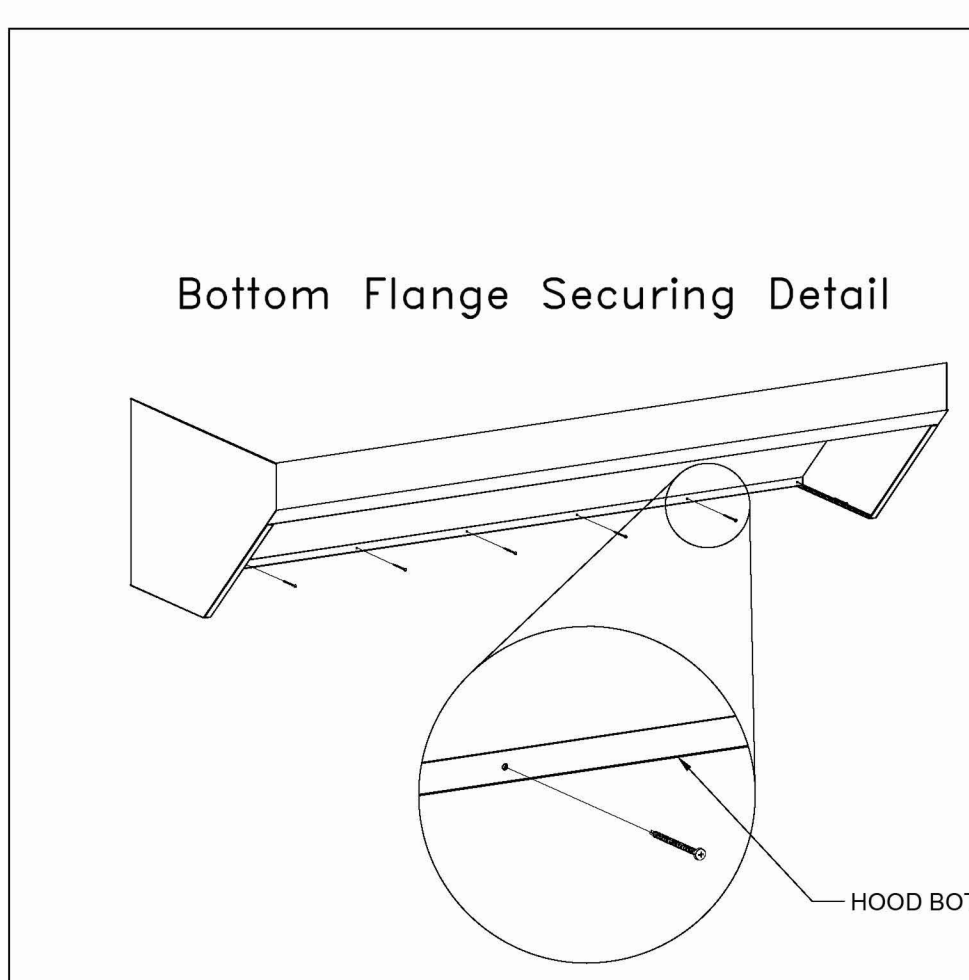
**PATENT NUMBERS**

EXHAUST HOODS ND-2/BD-2/SND-2 (CANADA) - CA PATENT #2520435 C.

**CLEARANCE TO COMBUSTIBLES**

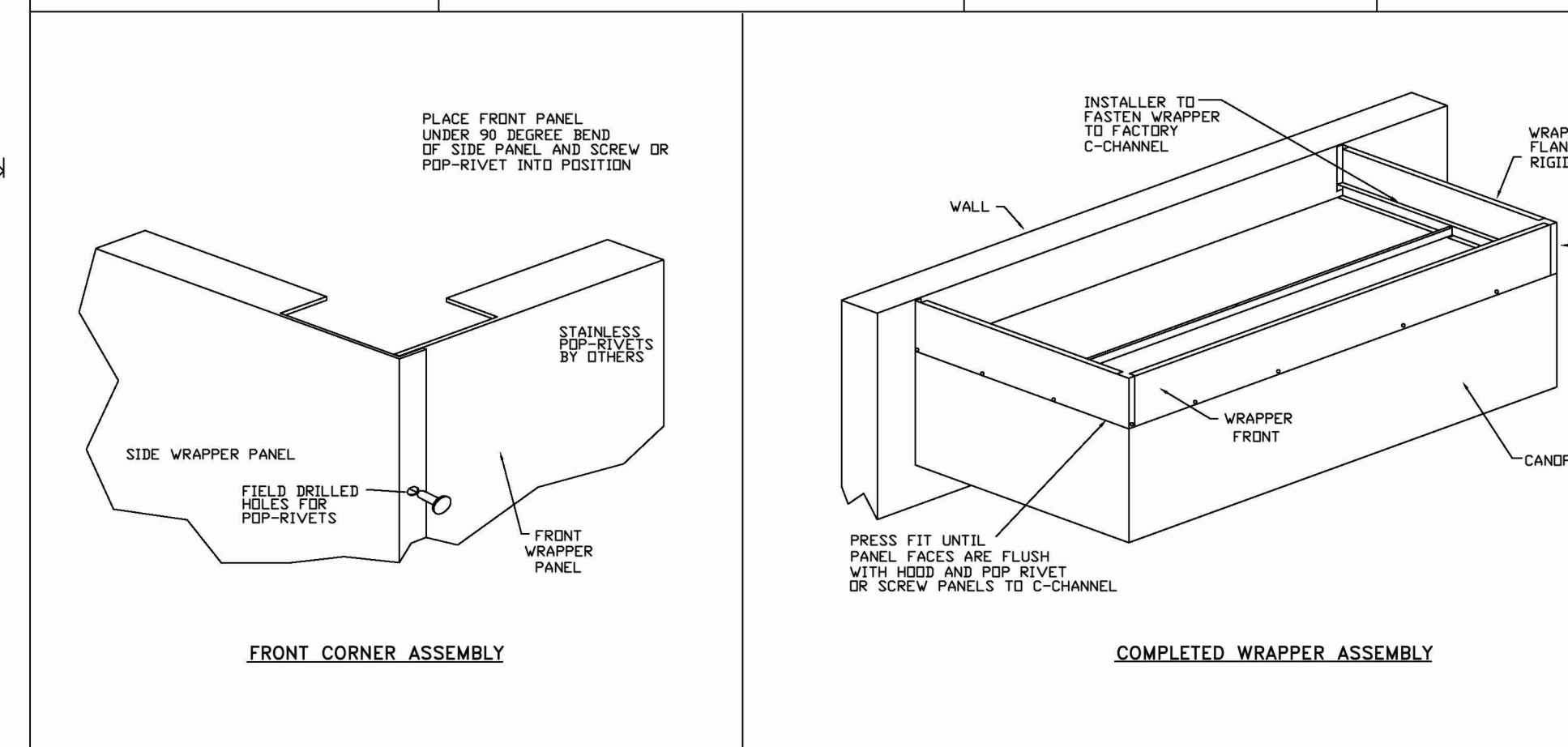
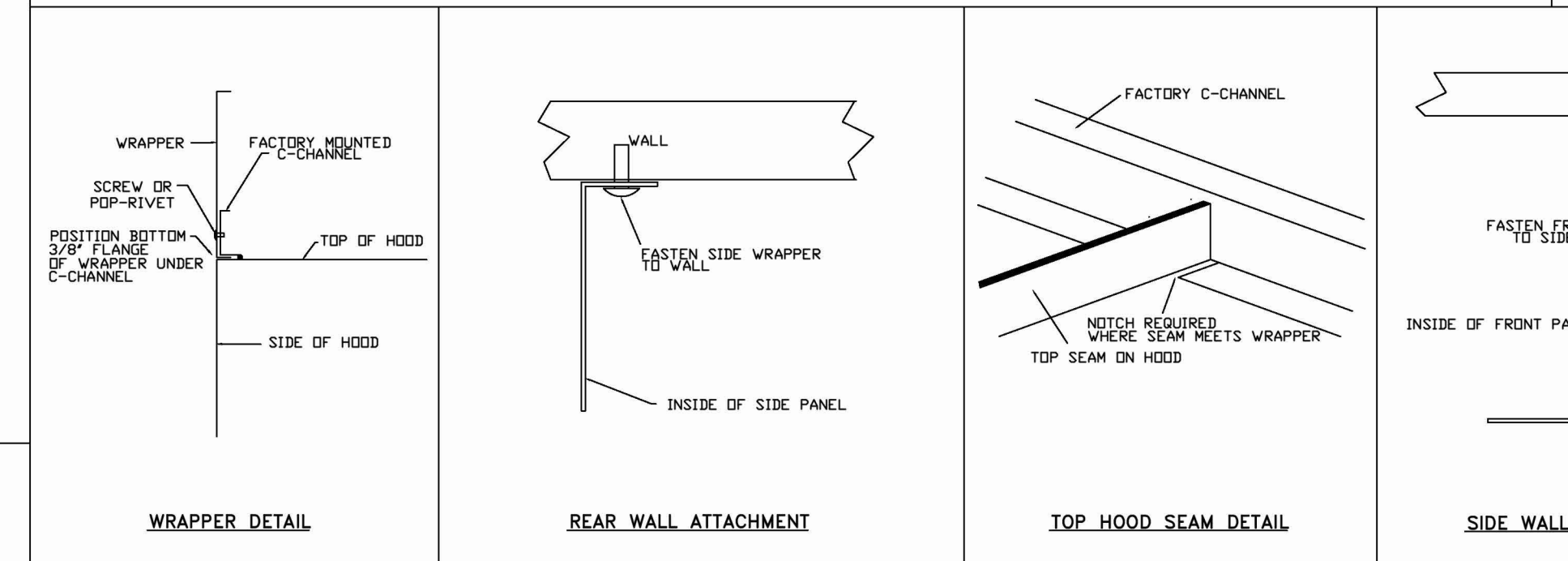
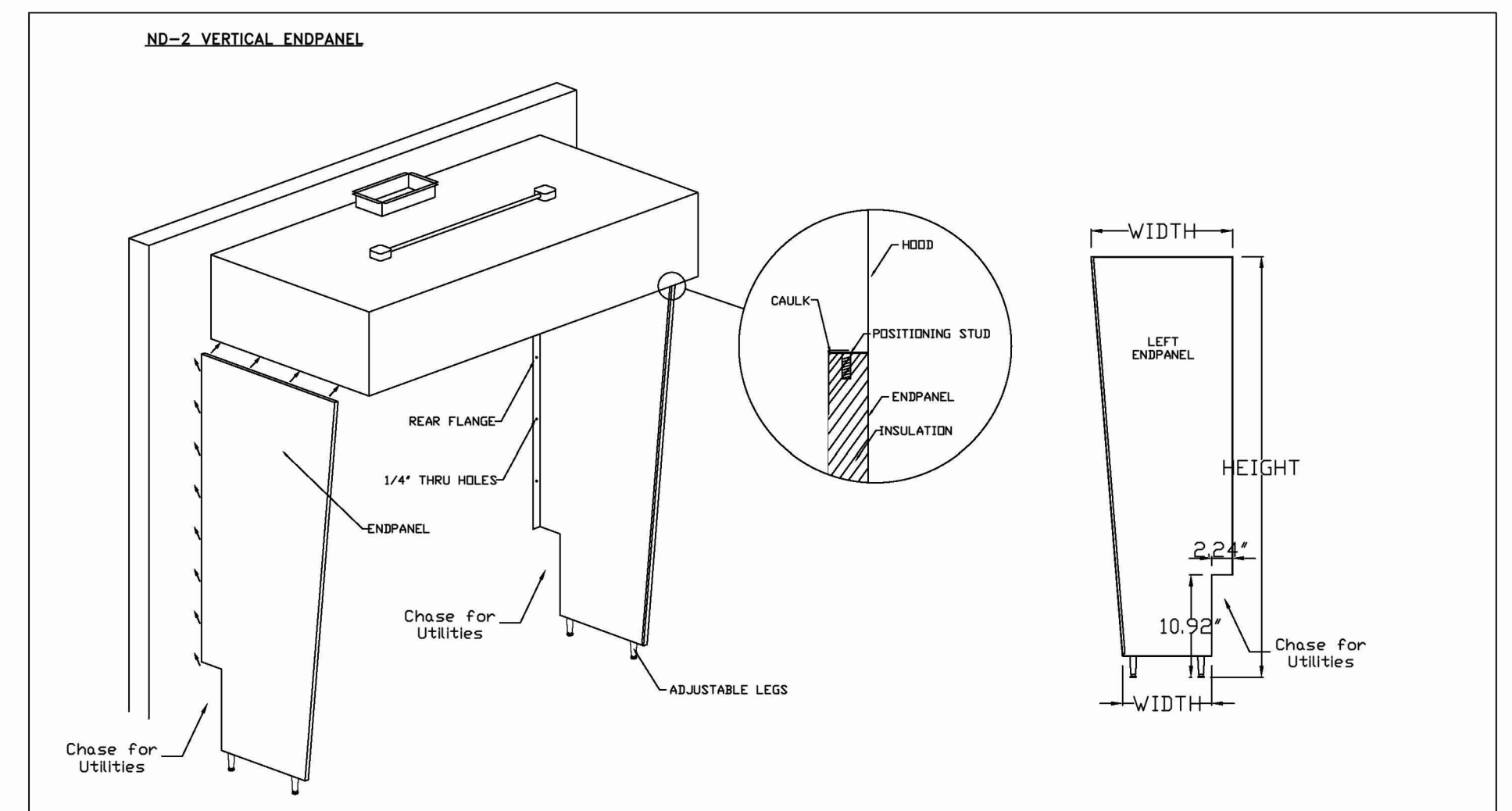
HOODS #	SURFACE	*CLEARANCE
1	TOP	18"
	FRONT	0"
	BACK	0"
	LEFT	18"
2	TOP	18"
	FRONT	0"
	BACK	0"
	LEFT	0"
	RIGHT	18"

- \*0" CLEARANCE TO COMBUSTIBLES CONFORMS TO UL710 STANDARD.  
 - HOOD MOUNTED UTILITY CABINETS REQUIRE 36" SERVICE CLEARANCE.



Bottom Flange Securing Detail

Secure the bottom of the hood to the rear wall using 1404 Evergreen Quik-Fastener. Use a minimum of 1 fastener every 16" on the bottom flange. For walls with metal studs, use a minimum of 1 fastener on the bottom flange at each stud.  
 Only Use SIL-BOND RTV 4500 silicone sealant on hood



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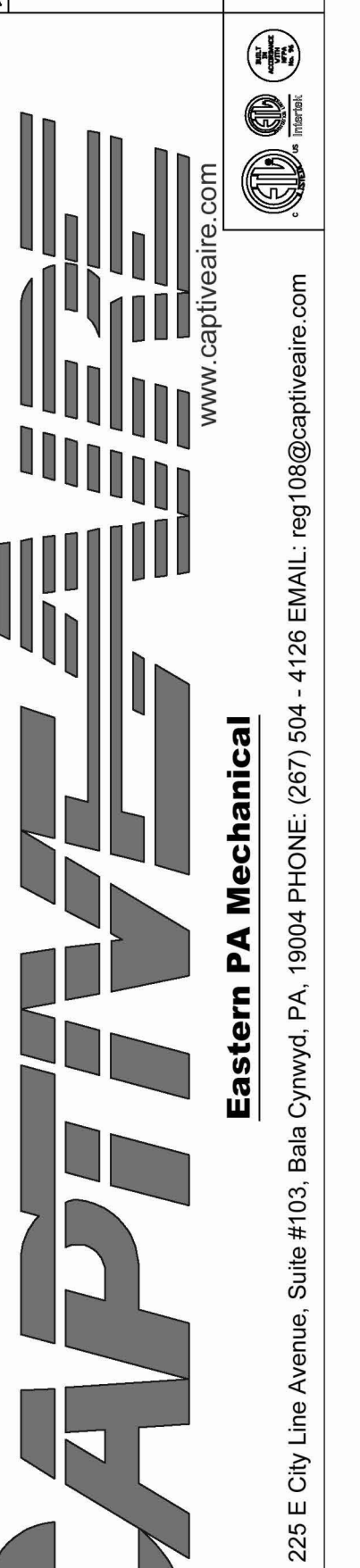
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**REVISIONS**

NO.	DESCRIPTION	DATE
1		
2		
3		
4		



Shake Shack-1623-Greece,NY(Kitchen)

DATE: 10/3/2024  
 DWG.#: 7082977  
 DRAWN BY: Joe Shilba  
 SCALE: 3/4" = 1'-0"  
 MASTER DRAWING  
 SHEET NO. 1

**Bergmeyer**

CONSULTANTS

800 South Figueroa St.  
 Los Angeles, CA 90017  
 310.900.8887

275 N High St.  
 Boston, MA 02210  
 617.542.1025  
 380.900.8887

SEAL SIGNATURE:

FOR REFERENCE ONLY

NO.	BY	DATE	DESCRIPTION
1	HRV	2025-03-24	IFC Set
A	HRV	2025-03-03	Addendum A
	HRV	2024-11-19	Permit Set
	HRV	2024-10-21	75% SET

**SHAKE SHACK**

SHAKE SHACK GREECE

2167 W RIDGE ROAD,  
 GREECE, N.Y. 14626  
 SHACK #1623

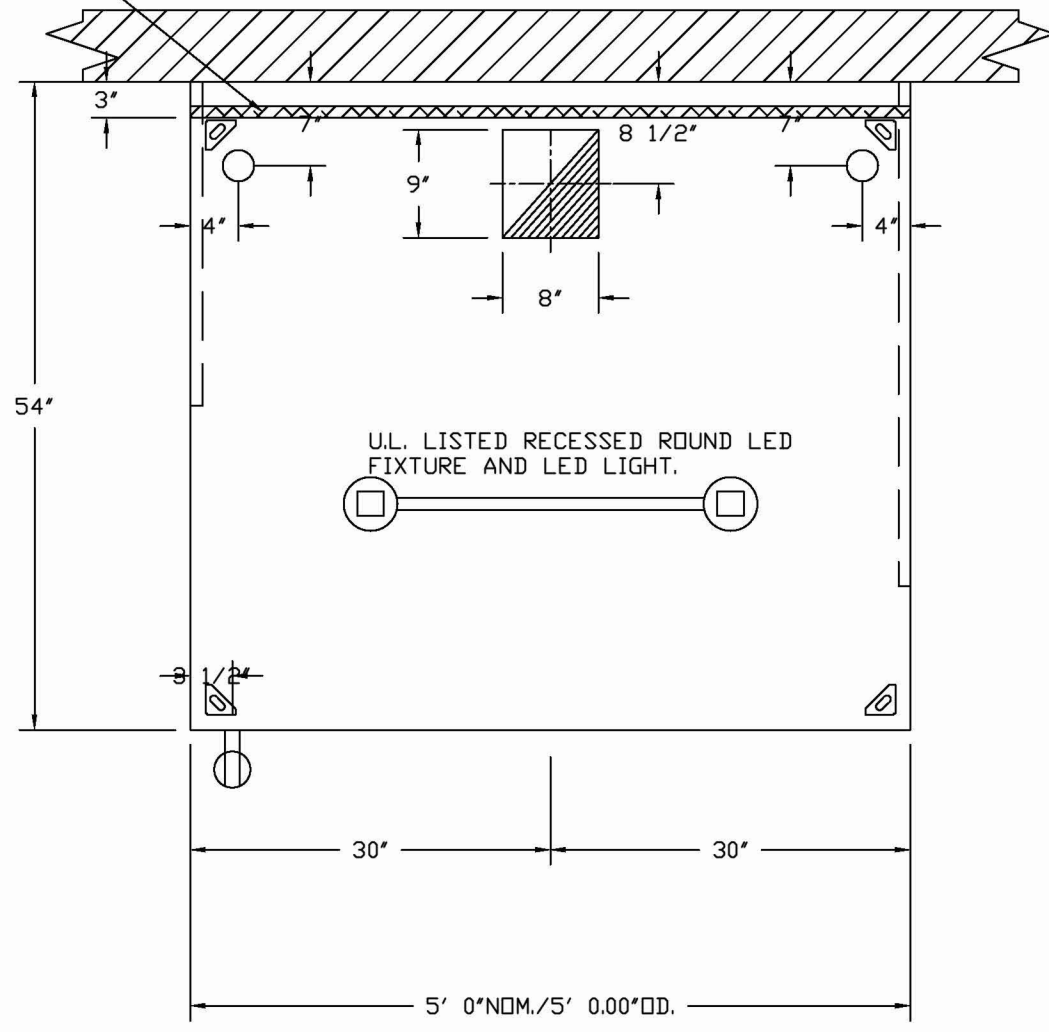
IFC SET

CAPTIVEAIRE DRAWINGS

DRAWN BY: EHC  
 CHECKED BY: JH  
 JOB NO: 20240150.00

**M701**

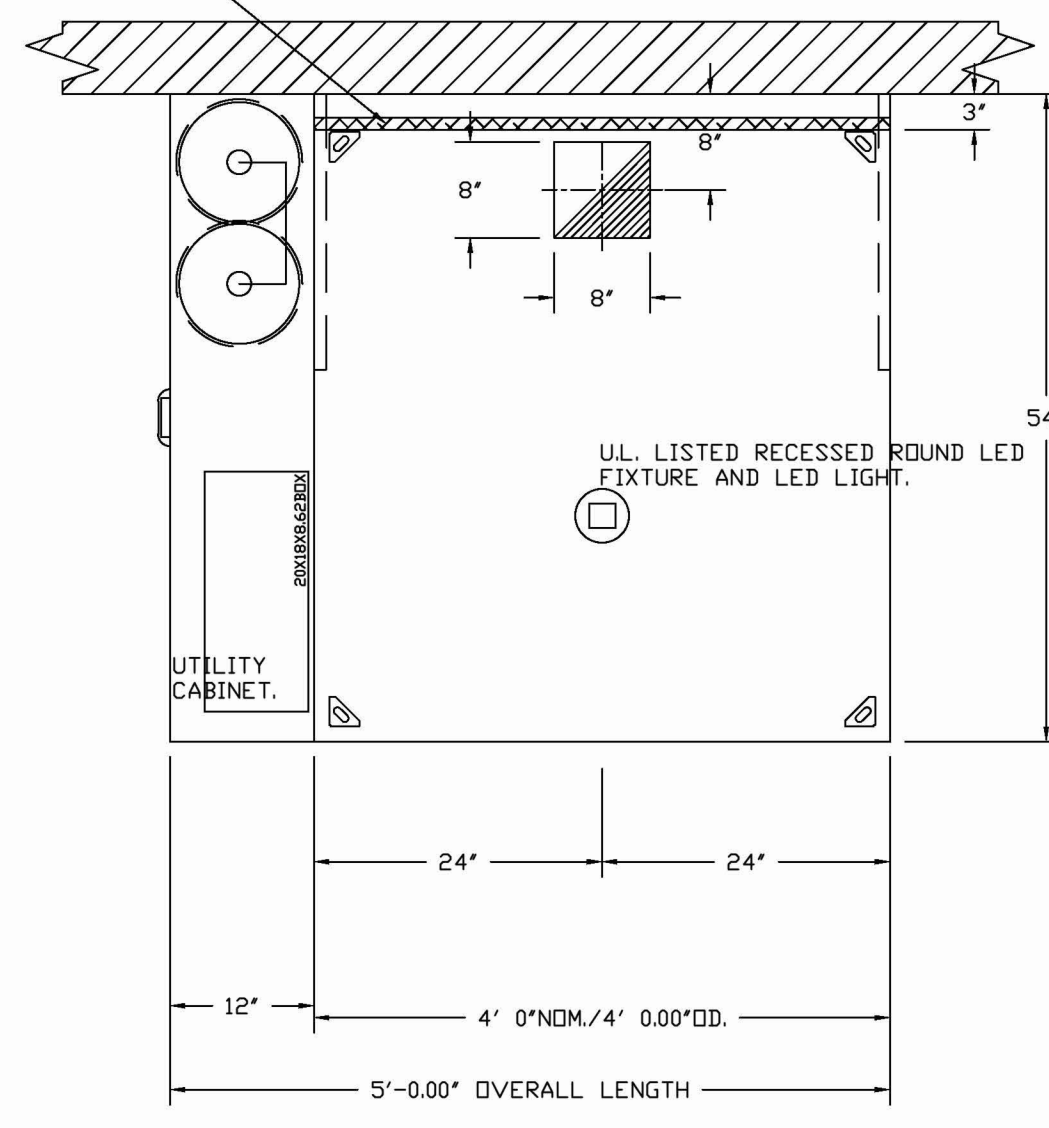
1" LAYER OF INSULATION FACTORY  
INSTALLED IN INTERNAL BACK STANDOFF.  
MEETS 0 INCH REQUIREMENTS FOR  
CLEARANCE TO COMBUSTIBLE SURFACES.



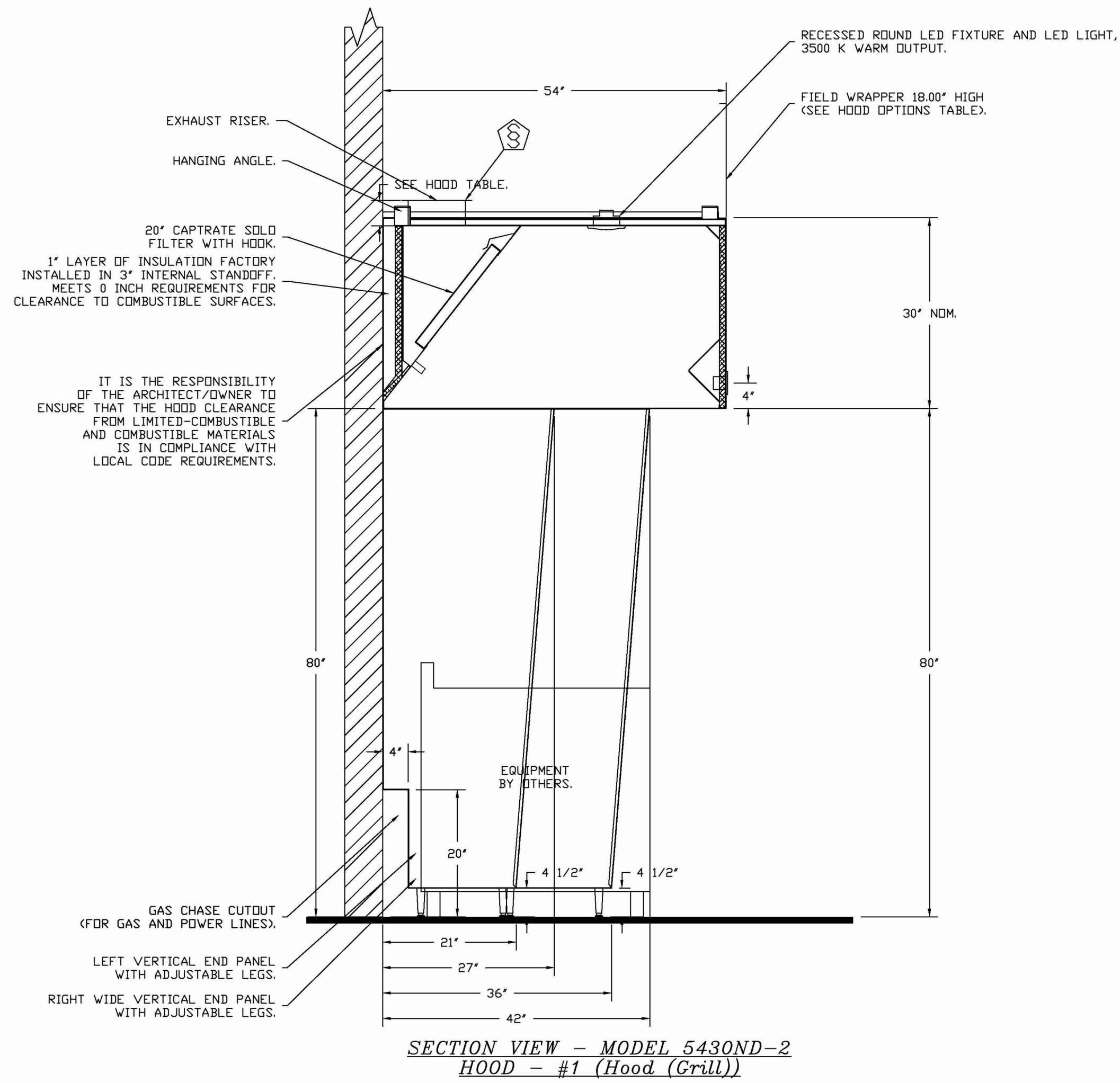
PLAN VIEW - HOOD #1 (Hood (Grill))  
5'-0.00" LONG 5430ND-2

(1) DUPLEX OUTLET

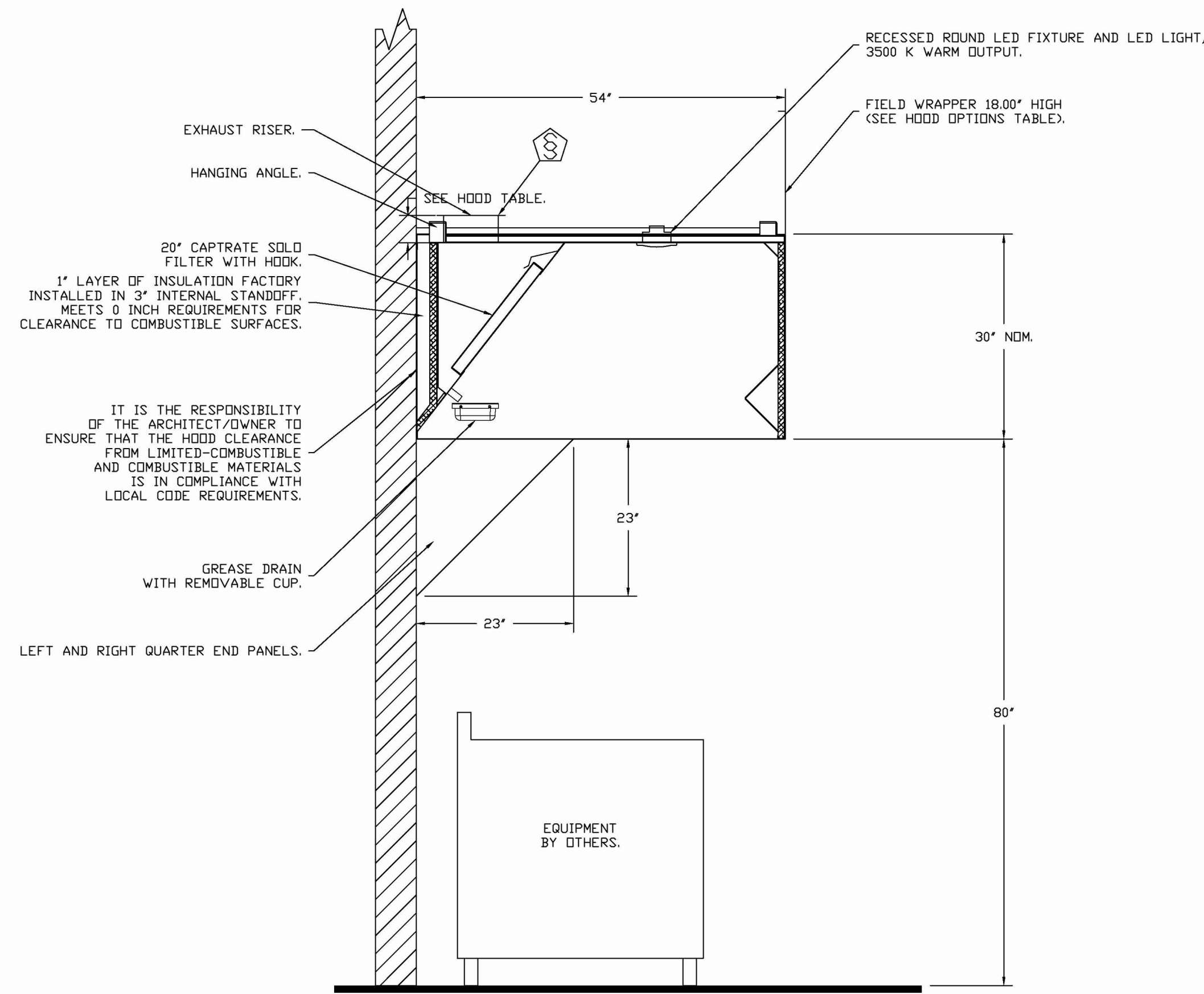
1" LAYER OF INSULATION FACTORY  
INSTALLED IN INTERNAL BACK STANDOFF.  
MEETS 0 INCH REQUIREMENTS FOR  
CLEARANCE TO COMBUSTIBLE SURFACES.



PLAN VIEW - HOOD #2 (Hood (Fryer))  
4'-0.00" LONG 5430ND-2



SECTION VIEW - MODEL 5430ND-2  
HOOD - #1 (Hood (Grill))



SECTION VIEW - MODEL 5430ND-2  
HOOD - #2 (Hood (Fryer))

**NOTE:**  
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MECHANICAL CONTRACTOR TO COORDINATE WITH CAPTIVEAIRE AND GENERAL  
CONTRACTOR PRIOR TO INSTALL.

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**TO THE BEST OF MY KNOWLEDGE,  
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REVISIONS	
DESCRIPTION	DATE

**CAPTIVEAIRE**  
www.captiveaire.com  
Eastern PA Mechanical  
226 E City Line Avenue, Suite #103, Bala Cynwyd, PA, 19004 PHONE: (267) 504-4126 EMAIL: reg108@captiveaire.com

Shake Shack-1623-Greece,NY(Kitchen)

DATE: 10/3/2024  
DWG.#:  
7082977  
DRAWN BY: Joe.shilba  
SCALE:  
3/4" = 1'-0"  
MASTER DRAWING  
SHEET NO.  
2

**Bergmeyer**  
CONSULTANTS:  
SEAL SIGNATURE:  
FOR REFERENCE ONLY

LA  
800 South Figueroa St.  
Los Angeles, CA 90017  
213.337.1090

CO  
275 N High St.  
Columbus, OH 43215  
380.900.8887

BCS  
611 Shaffer St.  
Boston, MA 02210  
617.542.1025

NO.	BY	DATE	DESCRIPTION
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A	HNY	2025-03-03	Addendum A
	HNY	2024-11-19	Permit Set
	HNY	2024-10-21	75% SET

**SHAKE SHACK**  
SHAKE SHACK GREECE  
2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623  
IFC SET

CAPTIVEAIRE DRAWINGS  
DRAWN BY: EHC  
CHECKED BY: JH  
JOB NO: 20240158.00  
**M702**



**EXHAUST FAN INFORMATION - JOB#7082977**

FAN UNIT NO.	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTDR ENCL.	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	KEF(GRILL)	1	DUS0HFA	CAPTIVEAIRE	750	1.000	1423	TEAD-ECM	0.500	0.2980	1	208	3.8	285 FPM	79	14
2	KEF(FRYER)	1	DUS0HFA	CAPTIVEAIRE	700	1.000	1408	TEAD-ECM	0.500	0.2890	1	208	3.8	266 FPM	79	13.6

**FAN OPTIONS**

FAN UNIT NO.	TAG	QTY	DESCRIPTION
1	KEF(GRILL)	1	GREASE BOX
		1	FAN BASE CERAMIC SEAL - DU/DR50HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	ECM WIRING PACKAGE - EXHAUST - MODBUS CONTROL -MSC- (TELCD, CCW ROTATION)
		1	2 YEAR PARTS WARRANTY
		1	GREASE BOX
2	KEF(FRYER)	1	GREASE BOX
		1	ECM WIRING PACKAGE - EXHAUST - MODBUS CONTROL -MSC- (TELCD, CCW ROTATION)
		1	FAN BASE CERAMIC SEAL - DU/DR50HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
		1	2 YEAR PARTS WARRANTY
		1	GREASE BOX

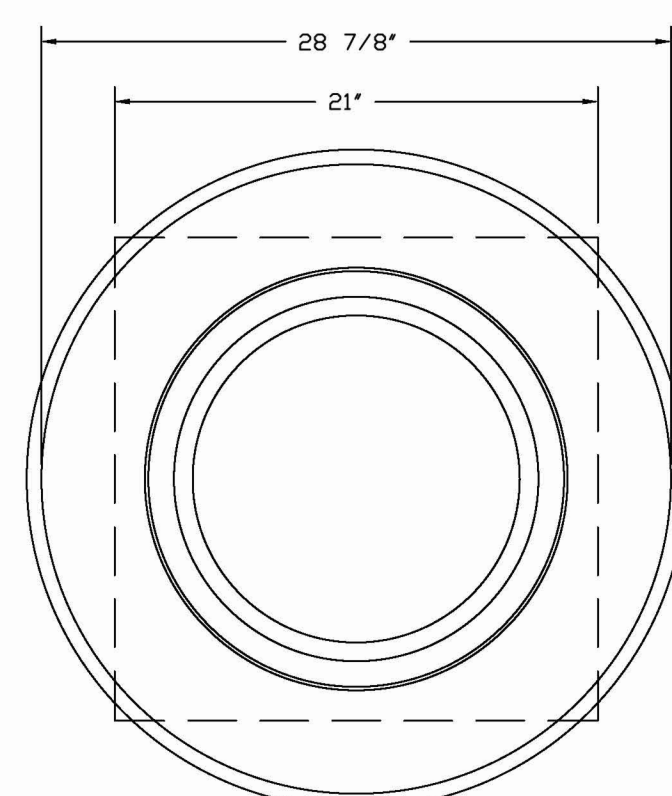
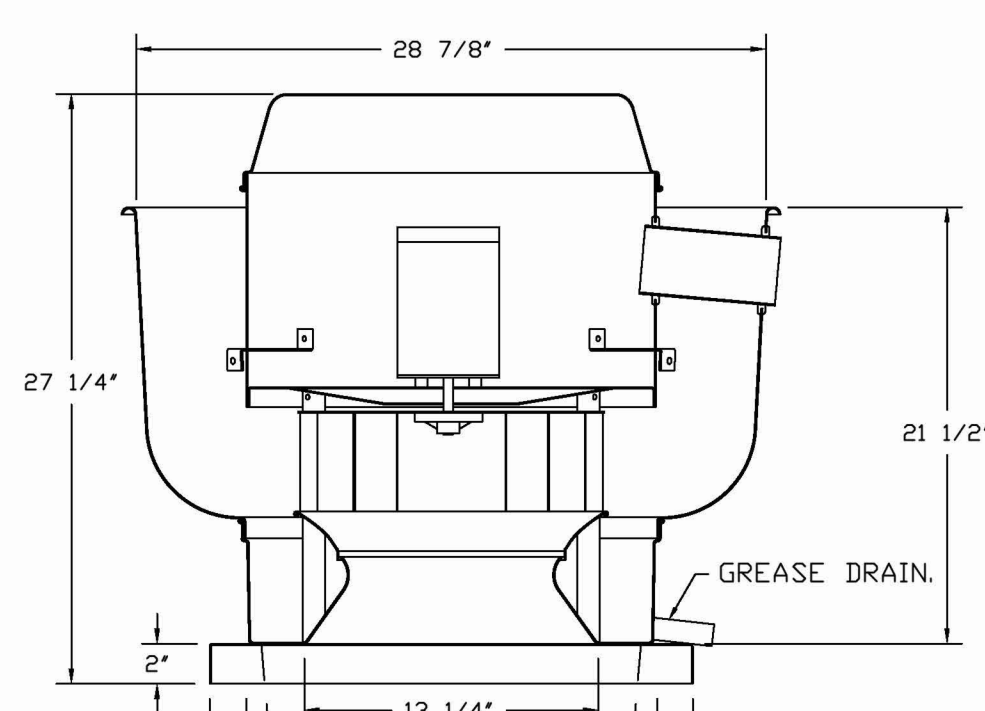
**FAN ACCESSORIES**

FAN UNIT NO.	TAG	EXHAUST				SUPPLY		
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF(GRILL)	YES						
2	KEF(FRYER)	YES						

**CURB ASSEMBLIES**

NO	DN FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF(FRYER)	31 LBS	CURB	19.500"W X 19.500"L X 20.000"H HINGED.
2	# 2	KEF(FRYER)	31 LBS	CURB	19.500"W X 19.500"L X 20.000"H HINGED.

**FANS #1 (KEF(GRILL)), #2 (KEF(FRYER)) - DUS0HFA EXHAUST FAN**



TOP VIEW

**FEATURES:**

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND UL-C-5645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

**NORMAL TEMPERATURE TEST**

EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETRIMENTARY EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

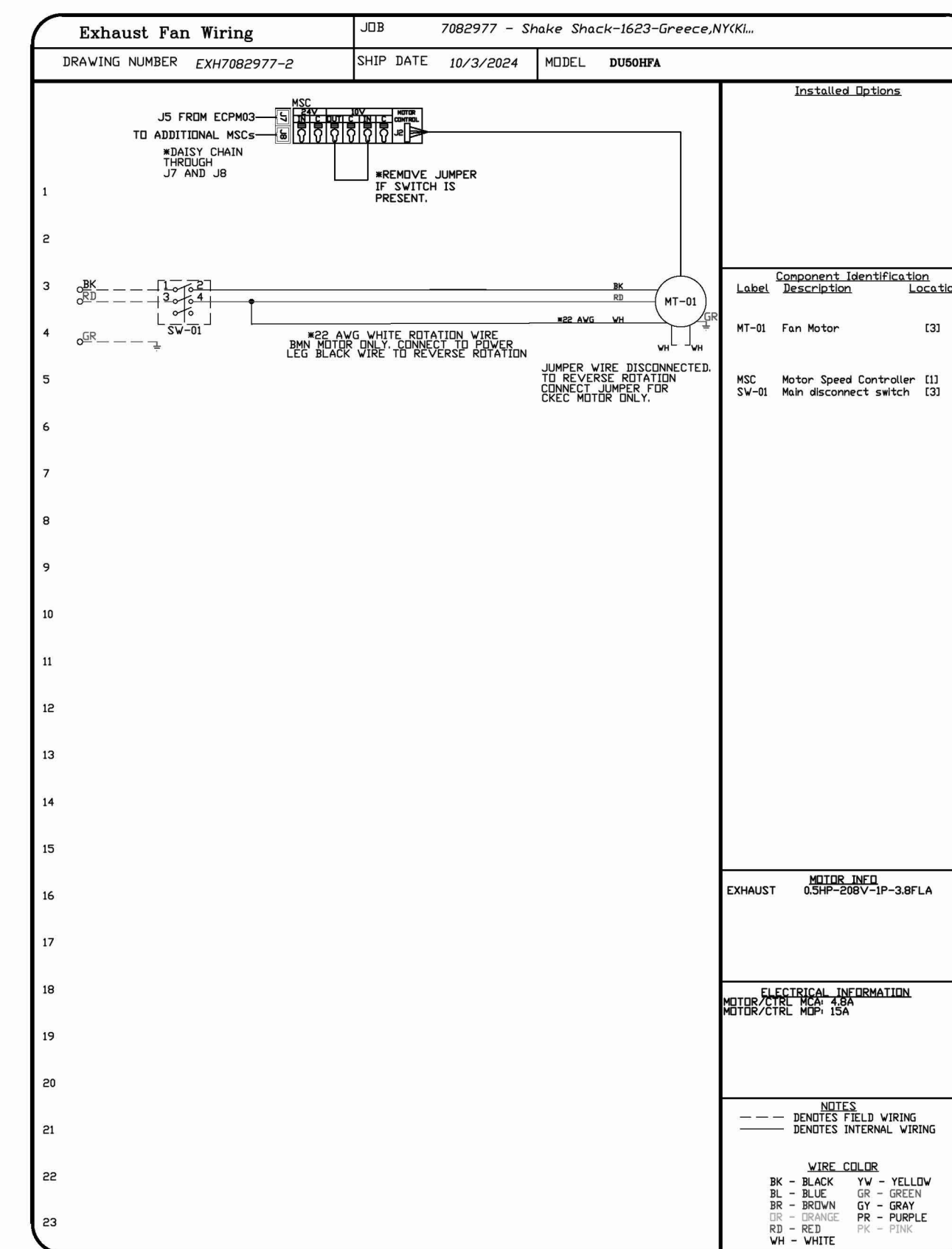
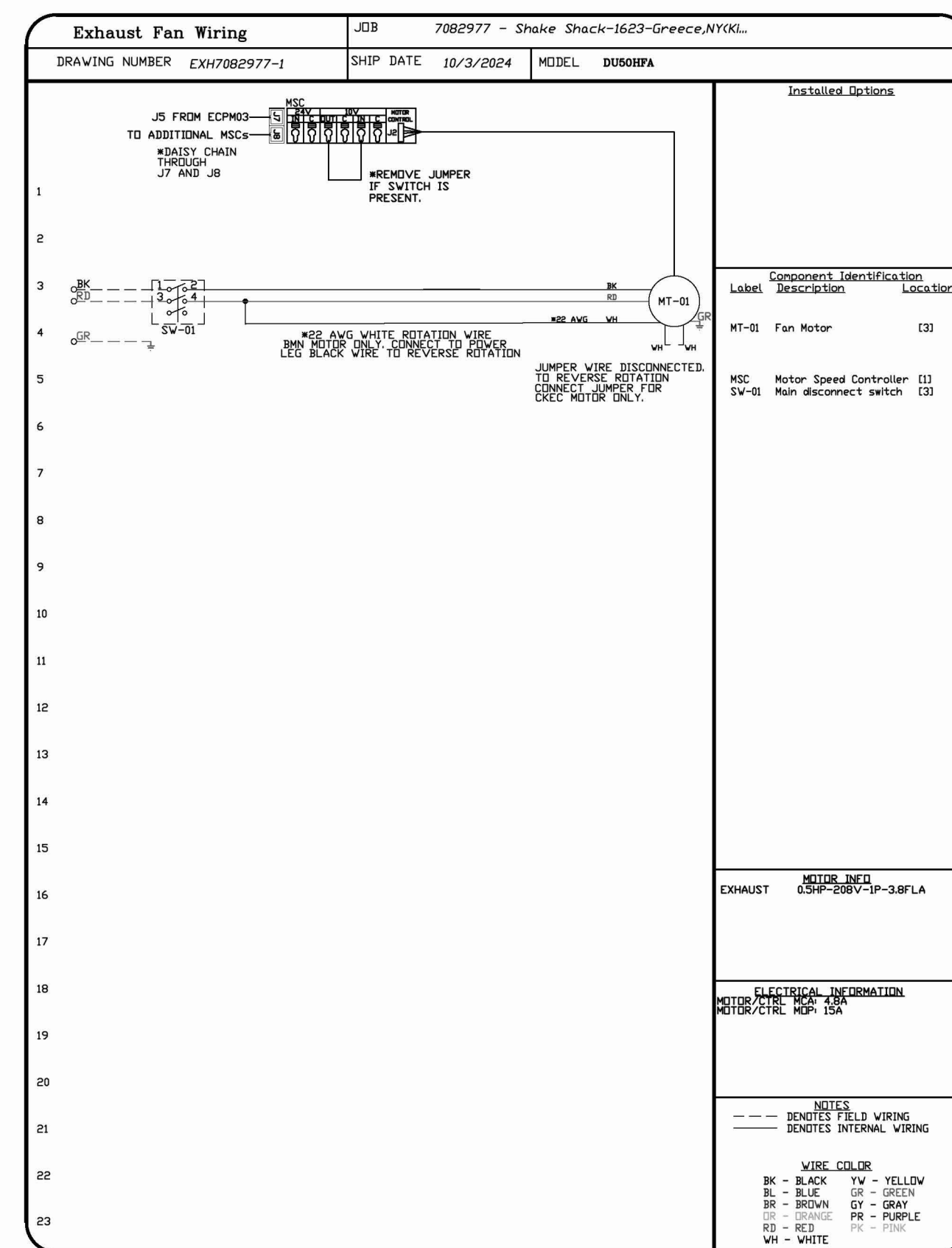
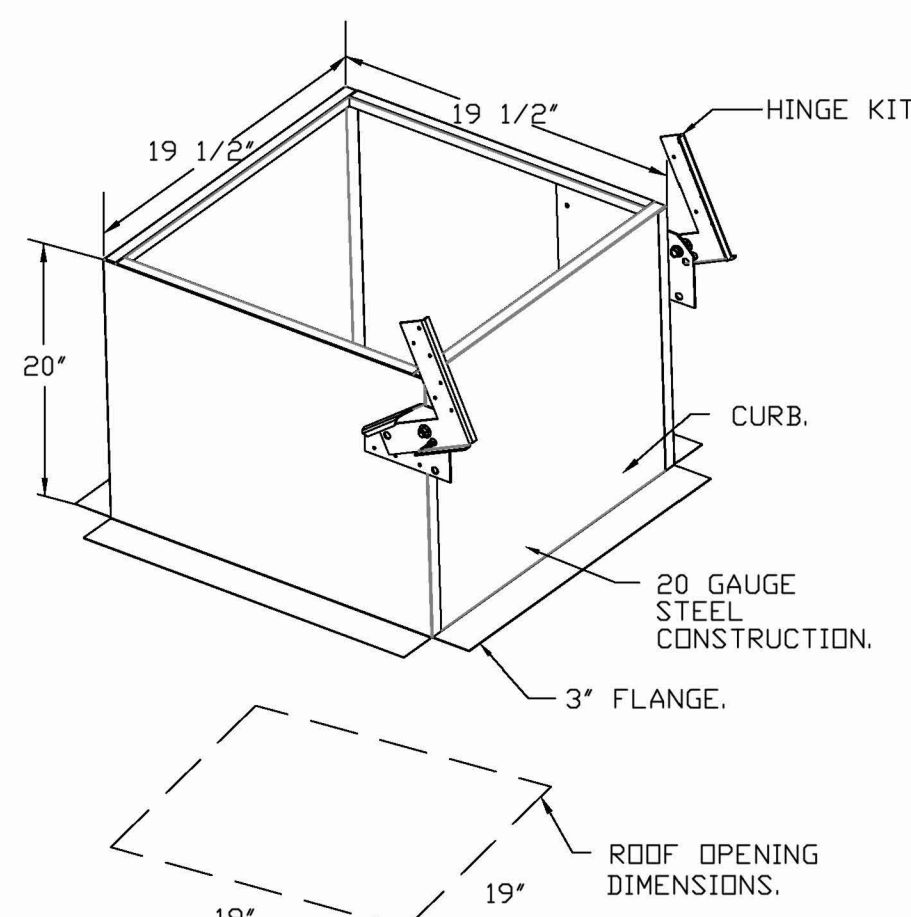
**ABNORMAL FLARE-UP TEST**

EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

**OPTIONS**

- GREASE BOX
- FAN BASE CERAMIC SEAL - DU/DR50HFA - INSTALLED AT PLANT - FOR GREASE DUCTS
- ECM WIRING PACKAGE - EXHAUST - MODBUS CONTROL -MSC- (TELCD, CCW ROTATION)
- 2 YEAR PARTS WARRANTY.

DUCTWORK BETWEEN EXHAUST RISER ON HOOD AND FAN (BY OTHERS).



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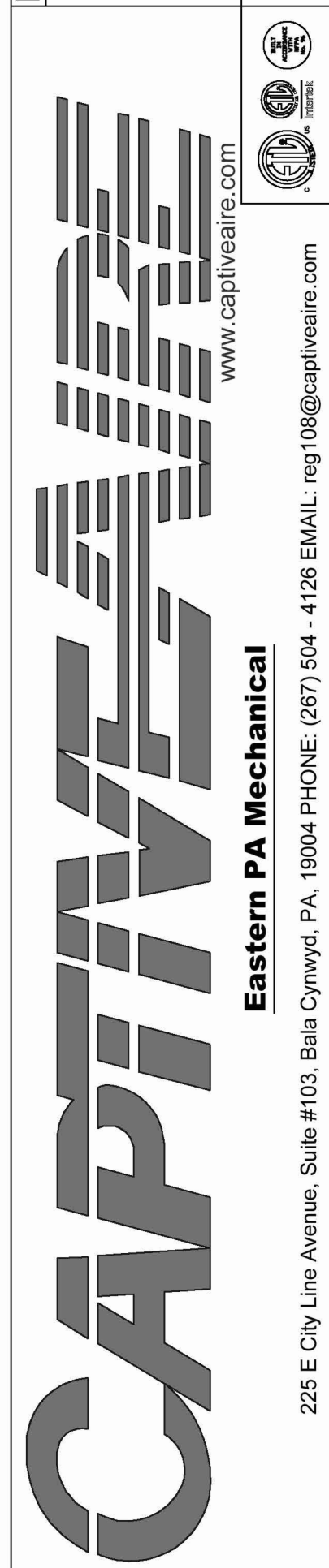
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2		
3		
4		



Shake Shack-1623-Greece,NY(Kitchen)

**DATE:** 10/3/2024  
**DWG.#:** 7082977  
**DRAWN BY:** Joe.shilba  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**  
**SHEET NO.** 4

**Bergmeyer**

CONSULTANTS:

SEAL SIGNATURE:

FOR REFERENCE ONLY

1 HNY 2025-03-24 IFC Set  
A HNY 2025-03-03 Addendum A  
HNY 2024-11-19 Permit Set  
HNY 2024-10-21 75% SET

**SHAKE SHACK**

SHAKE SHACK GREECE

2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623

IFC SET

CAPTIVEAIRE DRAWINGS

DRAWN BY: EHC  
CHECKED BY: JH  
JOB NO: 20240150.00

**M704**

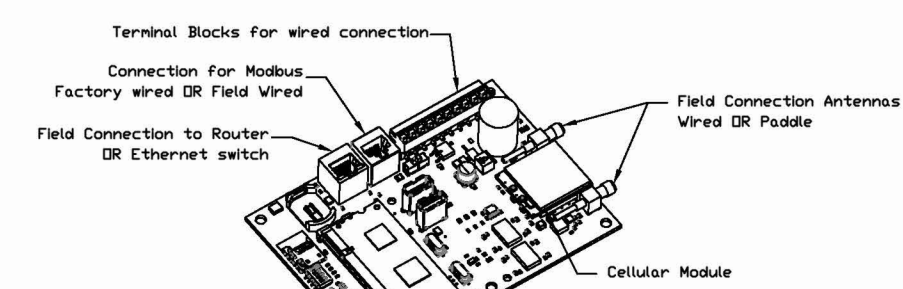
800 South Figueroa St.  
Los Angeles, CA 90017  
213.337.1090

815 N High St.  
Boston, MA 02210  
617.542.1025  
380.900.8887

228 E City Line Avenue, Suite #103, Bliss Cornyd, PA, 19004  
PHONE: (267) 504-4128 EMAIL: reg@captivaire.com

**ELECTRICAL PACKAGE - JOB#7082977**

NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED					
				LOCATION	QUANTITY		FAN TAG	TYPE	#	HP	VOLTI	FLA
1		SC-320110MA	UTILITY CABINET LEFT	UTILITY CABINET LEFT	1 LIGHT	SMART CONTROLS THERMOSTATIC CONTROL W/ RELAY ON/OFF WITH SUPPLY	KEF(GRILL)	EXHAUST	1	0.500	208	3.8
				HOOD # 2	1 FAN		KEF(FRYER)	EXHAUST	1	0.500	208	3.8

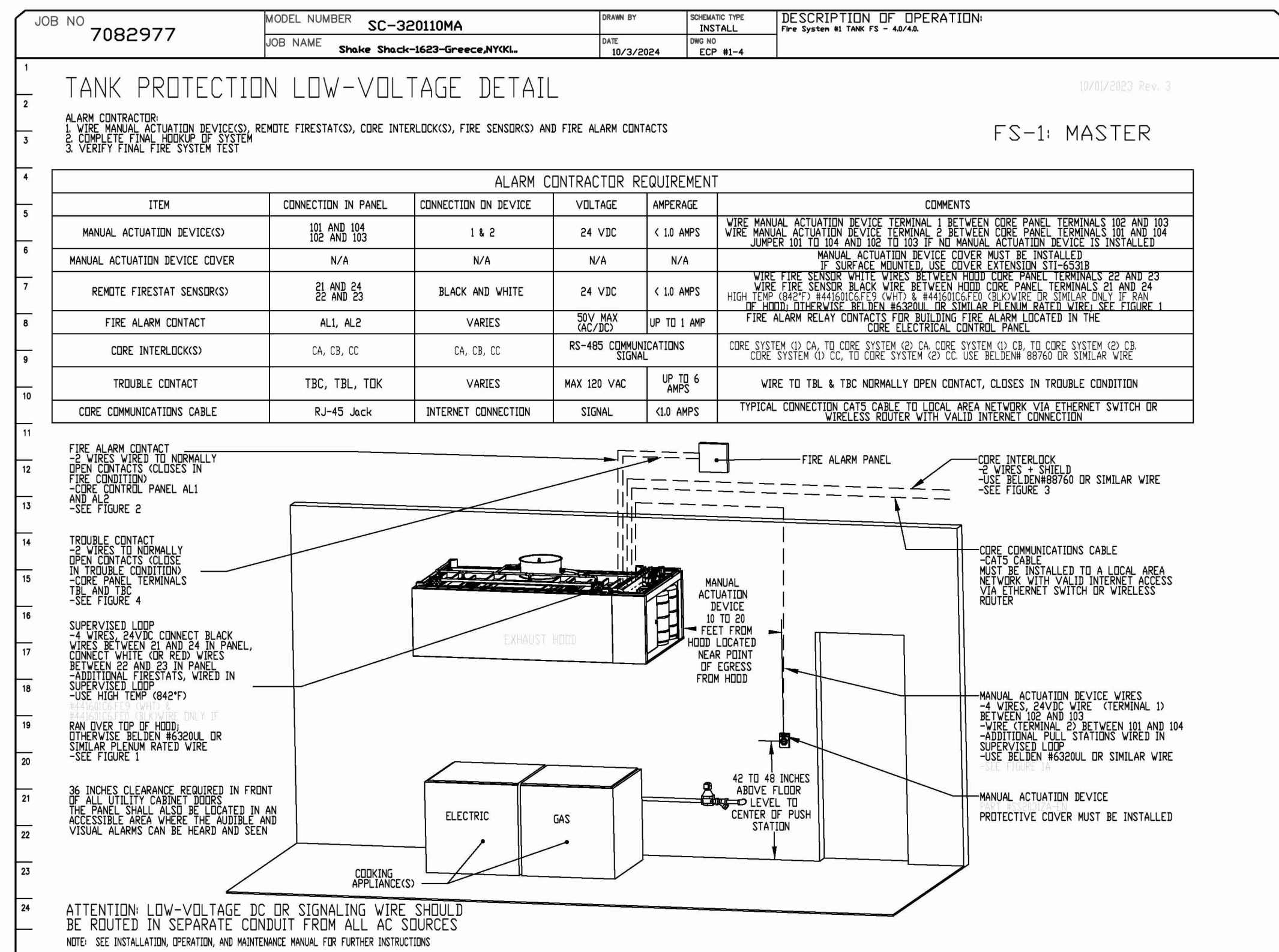
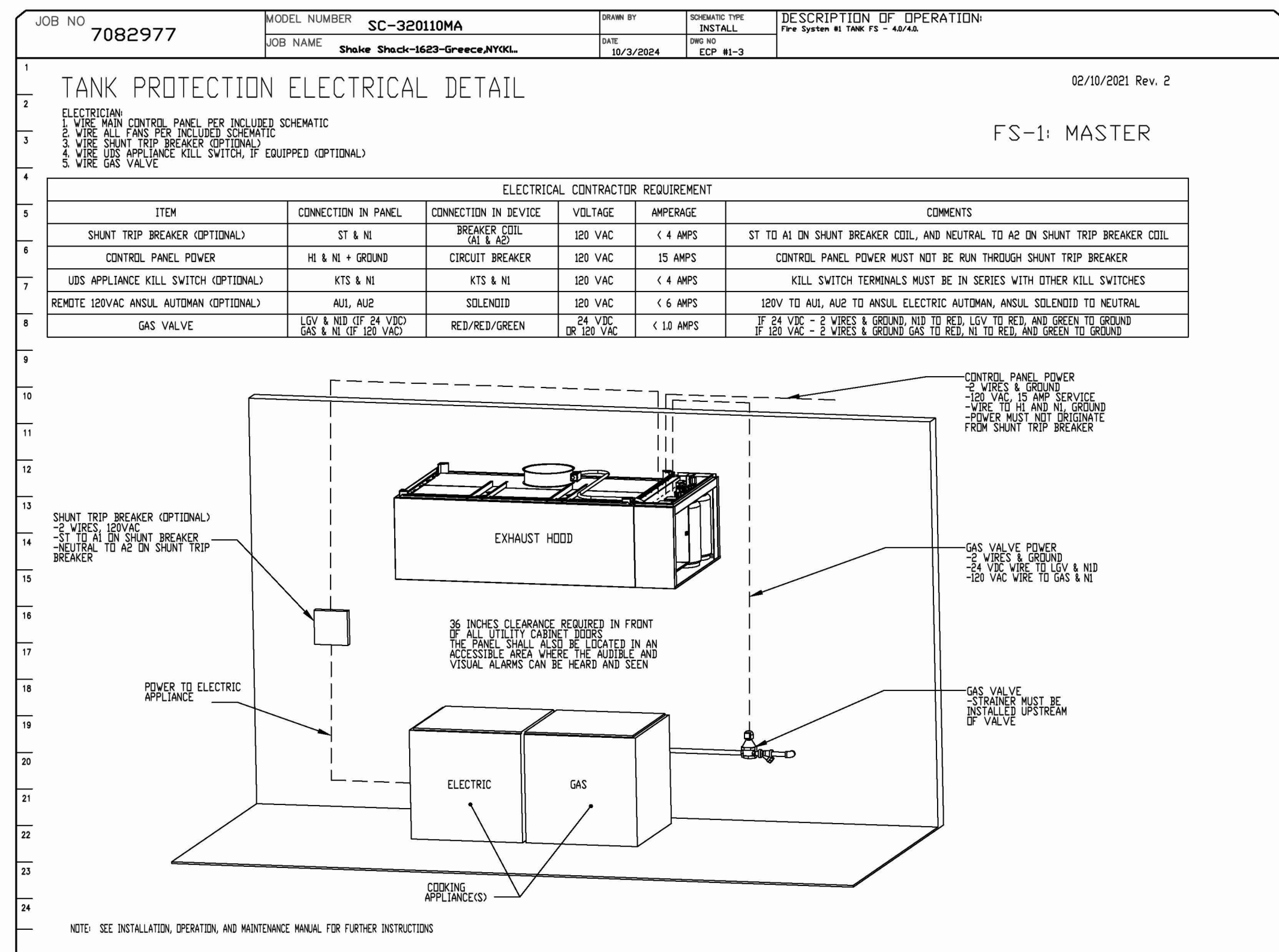
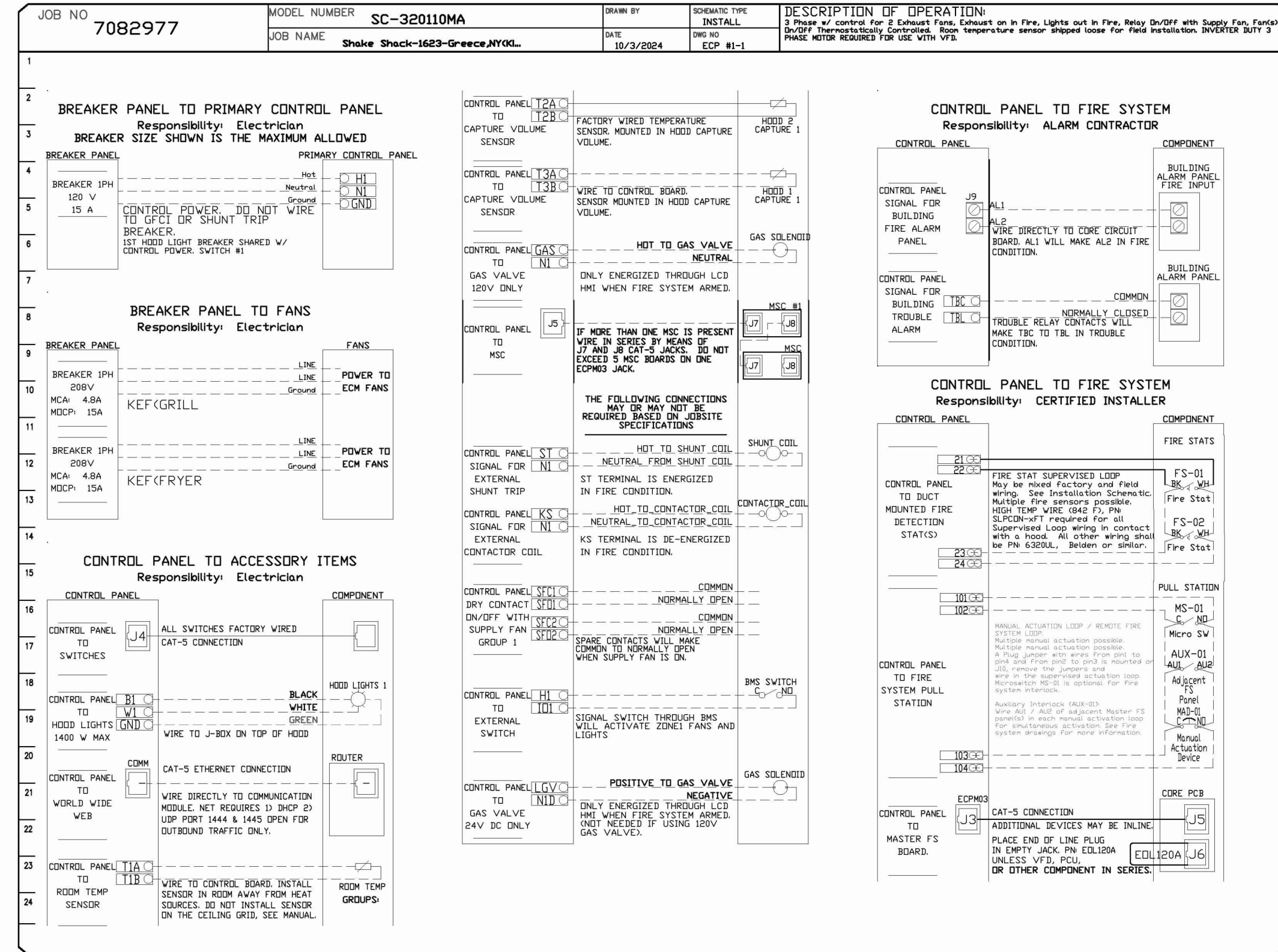


**CASlink Monitor and Control**

— Hood control panel to support communications to cloud-based Building Management System.  
 — Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.  
 — Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as CONTROL in the points list.  
 — Hood Control Panel to allow cloud-based Building Management System to implement SYSTEM ECONOMIZER control strategies for fully integrated Building Management.

**MONITORING AND CONTROL POINTS LIST**

RFV Packages	Function	SC Packages	Function
Room Temperature	MONITOR	Room Temperature(s)	MONITOR
Duct Temperature(s)	MONITOR	Duct Temperature(s)	MONITOR
WVA Discharge Temperature	MONITOR	WVA Discharge Temperature	MONITOR
Return RTU Discharge Temperature	MONITOR	Return RTU Discharge Temperature	MONITOR
Fan Speed	MONITOR	Fan Speed	MONITOR
Fan Ampage	MONITOR	Fan Ampage	MONITOR
Fan Phase	MONITOR	Fan Phase	MONITOR
VFD Faults	MONITOR	VFD Faults	MONITOR
Condenser Faults	MONITOR	Condenser Faults	MONITOR
Fan Faults	MONITOR	Fan Faults	MONITOR
Fan Status	MONITOR	COSE Fan System	MONITOR
VFD Faults	MONITOR	Building Presence	MONITOR
VFD Filter Cap Percentage	MONITOR	Fan Filter Cap Percentage	MONITOR & CONTROL
Fan Condition	MONITOR & CONTROL	Light Intensity(s)	MONITOR
COSE Fan System	MONITOR & CONTROL	Peak Status	MONITOR & CONTROL
Building Presence	MONITOR		
Prop New Button	MONITOR & CONTROL		
Peak Button	MONITOR & CONTROL		
Light Button	MONITOR & CONTROL		
Peak Button	MONITOR & CONTROL		



**REVISIONS**

NO	DESCRIPTION	DATE

**CAPTIVEAIRE**  
 Eastern PA Mechanical  
 225 E City Line Avenue, Suite #103, Balla Cynwyd, PA 19004 PHONE: (267) 504-4126 EMAIL: reg.108@captiveaire.com  
 www.captiveaire.com

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**DATE:** 10/3/2024  
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**DRAWN BY:** Joe Shilba  
**SCALE:** 3/4" = 1'-0"  
**MASTER DRAWING**

**SHEET NO.**  
5

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**Bergmeyer**  
 CONSULTANTS  
 SEAL SIGNATURE: \_\_\_\_\_  
 FOR REFERENCE ONLY  
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 A HNY 2025-03-03 Addendum A  
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 HNY 2024-10-21 75% SET

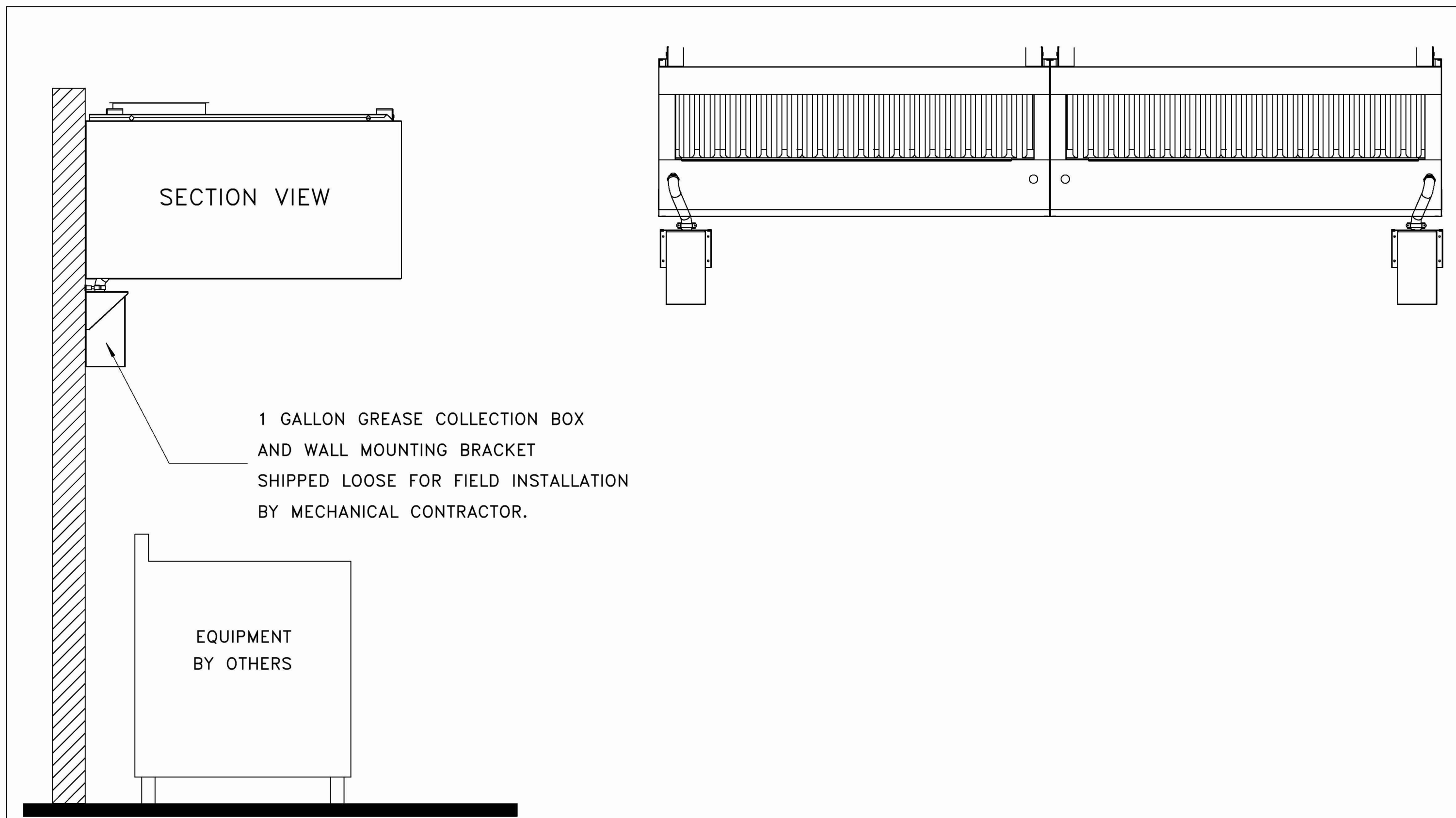
**SHAKE SHACK**  
 SHAKE SHACK GREECE  
 2167 W RIDGE ROAD, GREECE, N.Y. 14626  
 SHACK #1623

IFC SET  
 CAPTIVEAIRE DRAWINGS

DRAWN BY: EHC  
 CHECKED BY: JH  
 JOB NO: 20240150.00

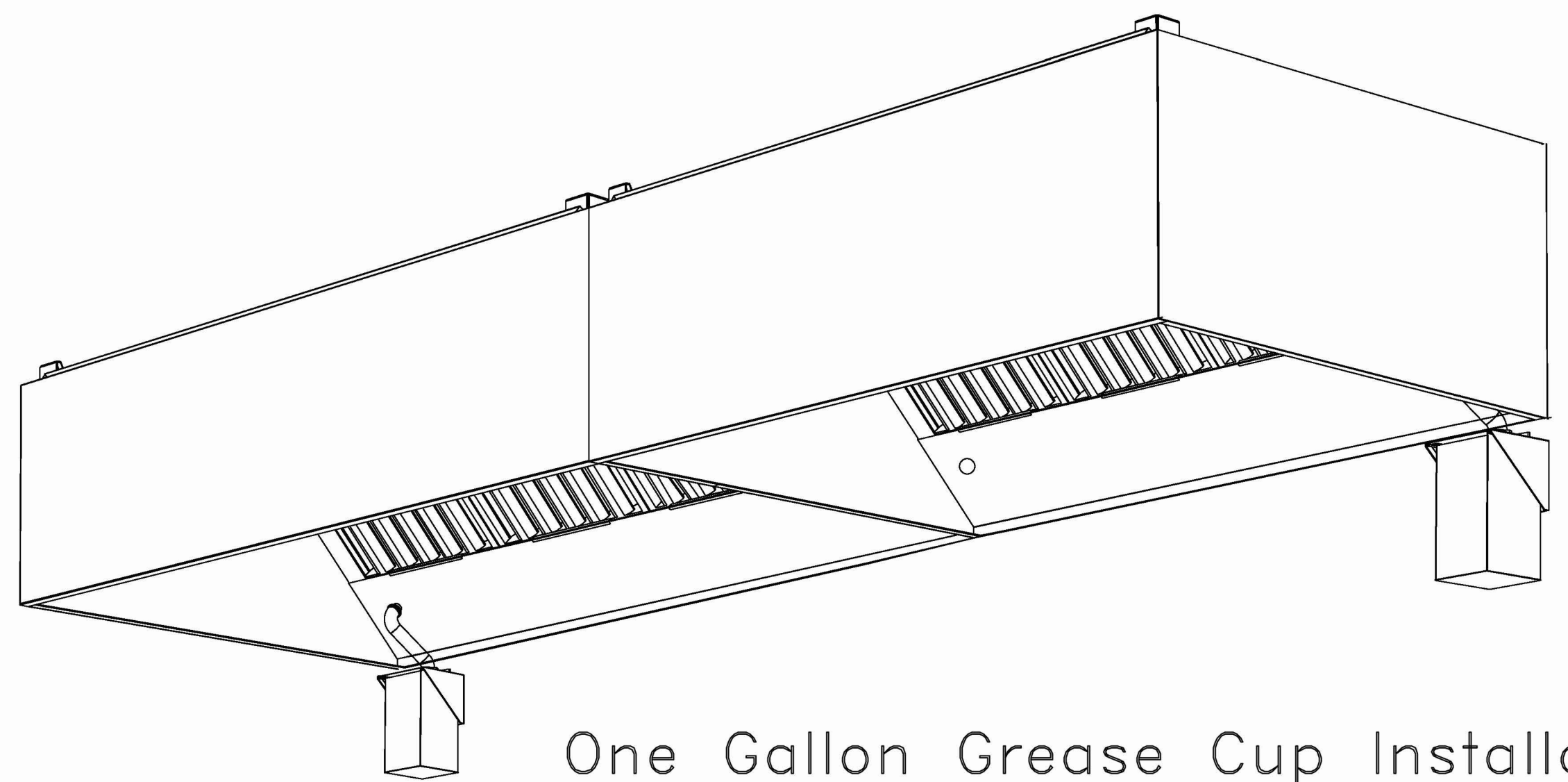
**M705**

www.Bergmeyer.com  
 800 South Figueroa St., Los Angeles, CA 90017  
 380 900 8887  
 215.337.1090



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

EQUIPMENT BY OTHERS

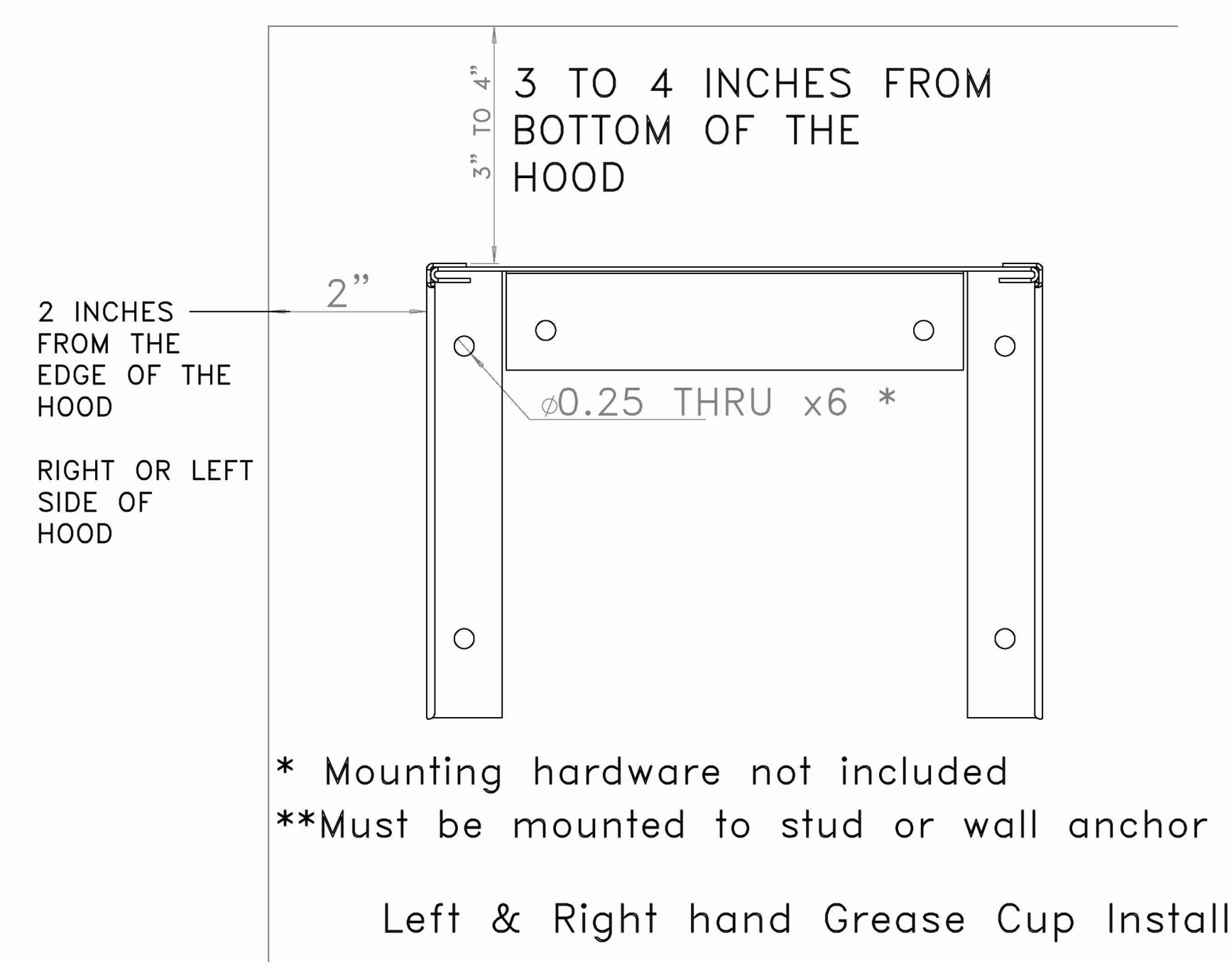


One Gallon Grease Cup Installation

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.

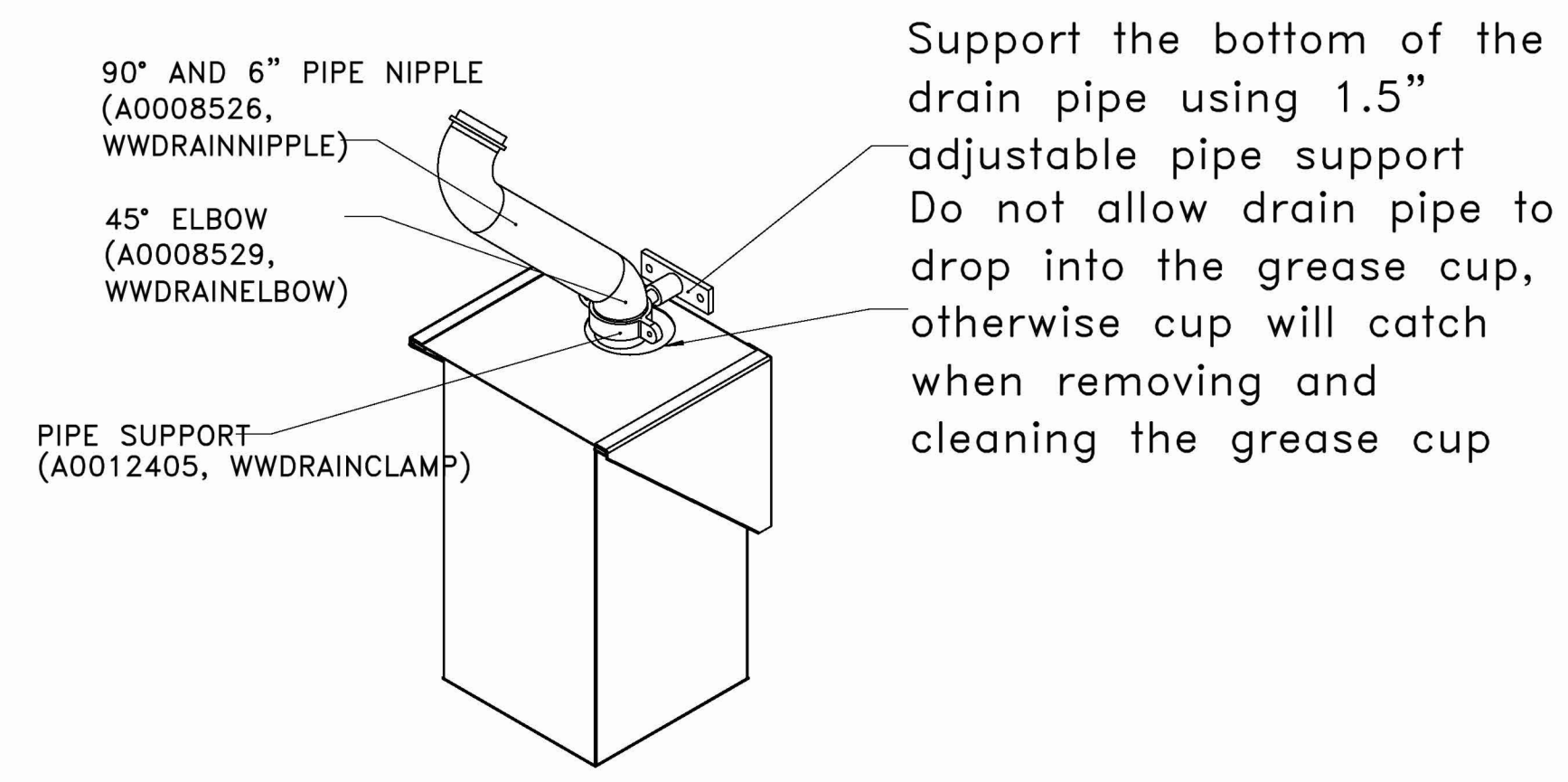
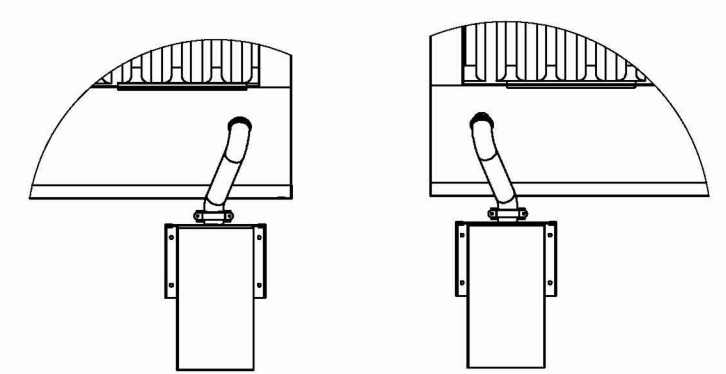


2 INCHES FROM THE EDGE OF THE HOOD  
RIGHT OR LEFT SIDE OF HOOD

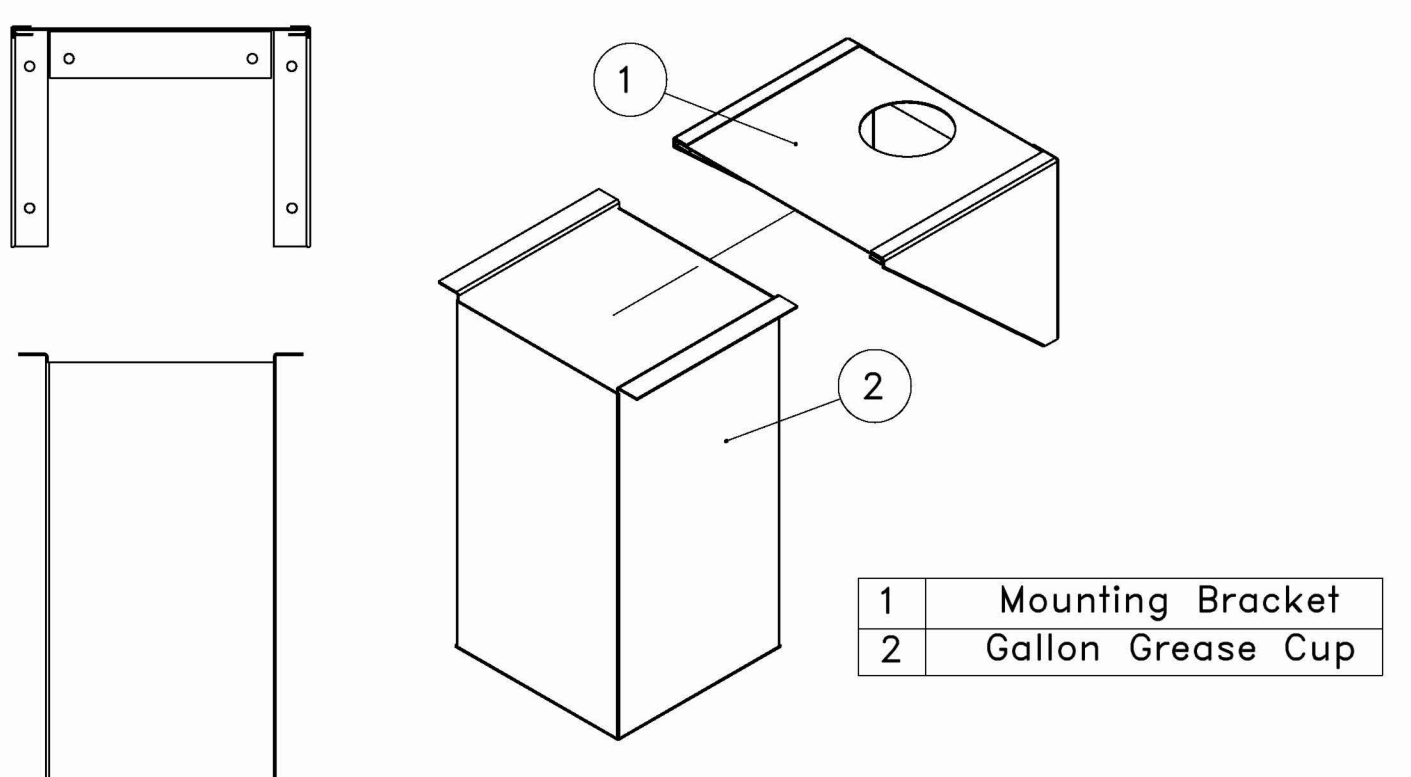
3 TO 4 INCHES FROM BOTTOM OF THE HOOD

\* Mounting hardware not included  
\*\*Must be mounted to stud or wall anchor

Left & Right hand Grease Cup Install



Gallon Grease Cup Assembly



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

REVISIONS	
DESCRIPTION	DATE

**CAPTIVE**  
www.captiveaire.com  
Eastern PA Mechanical  
225 E City Line Avenue, Suite #103, Bala Cynwyd, PA, 19004 PHONE: (267) 504-4128 EMAIL: reg108@captiveaire.com

Shake Shack-1623-Greece,NY(Kitchen)

DATE: 10/3/2024  
DWG.#: 7082977  
DRAWN BY: Joe,shilba  
SCALE: 3/4" = 1'-0"  
MASTER DRAWING  
SHEET NO. 6

**NOTE:**  
FAN CURBS PROVIDED BY LANDLORD. REFER TO RESPONSIBILITY MATRIX. MECHANICAL CONTRACTOR TO COORDINATE WITH CAPTIVEAIRE AND GENERAL CONTRACTOR PRIOR TO INSTALL.

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**TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 NEW YORK STATE ENERGY CODE.**

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**Bergmeyer**  
CONSULTANTS:  
SEAL SIGNATURE:  
FOR REFERENCE ONLY

CONSULTANTS:  
SEAL SIGNATURE:  
FOR REFERENCE ONLY

1 HNY 2025-03-24 IFC Set  
A HNY 2025-03-03 Addendum A  
HNY 2024-11-19 Permit Set  
HNY 2024-10-21 75% SET

NO.	BY	DATE	DESCRIPTION
1	HNY	2025-03-24	IFC Set
A	HNY	2025-03-03	Addendum A
	HNY	2024-11-19	Permit Set
	HNY	2024-10-21	75% SET

**SHAKE SHACK GREECE**

SHAKE SHACK GREECE

2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623

IFC SET

CAPTIVEAIRE DRAWINGS

DRAWN BY: EHC  
CHECKED BY: JH  
JOB NO: 20240158.00

**M706**

DOAS/RTU FAN SCHEDULE - JOB#7082962

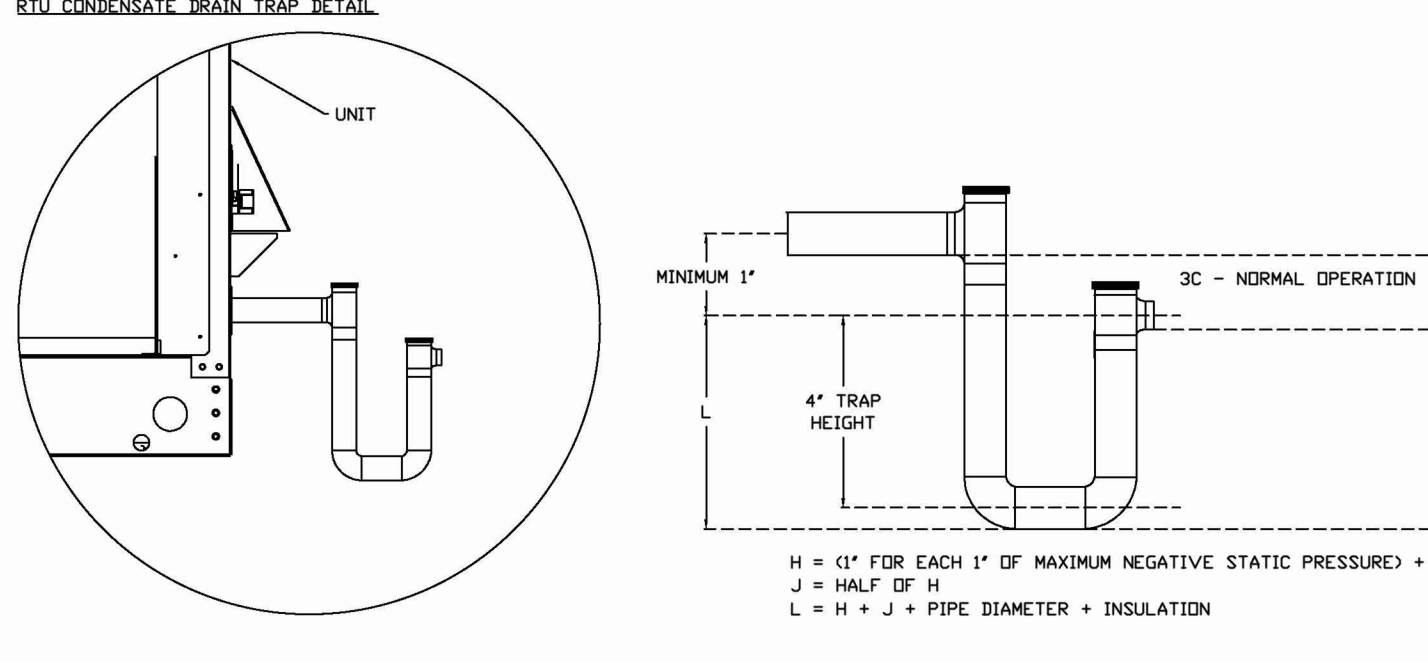
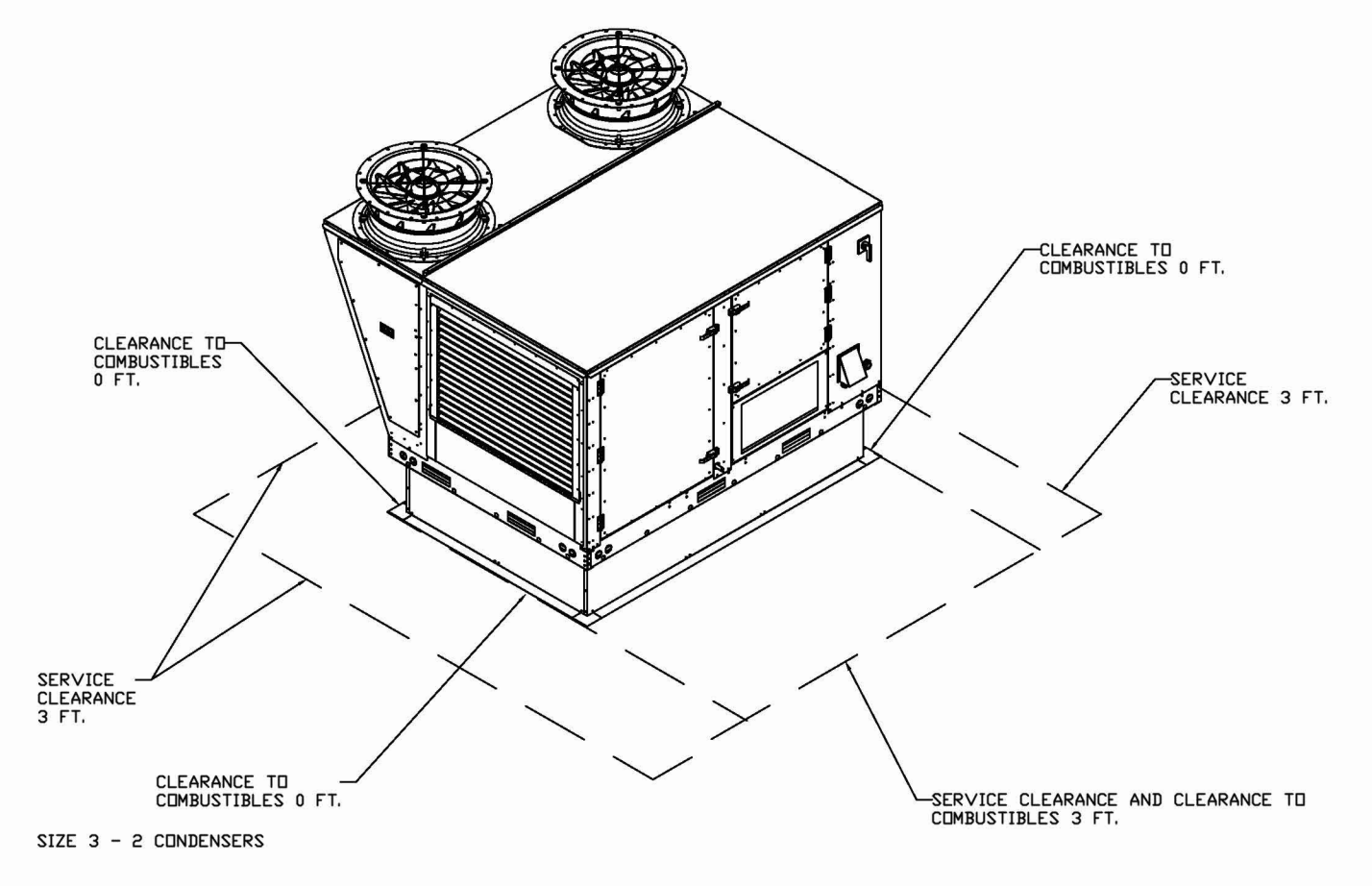
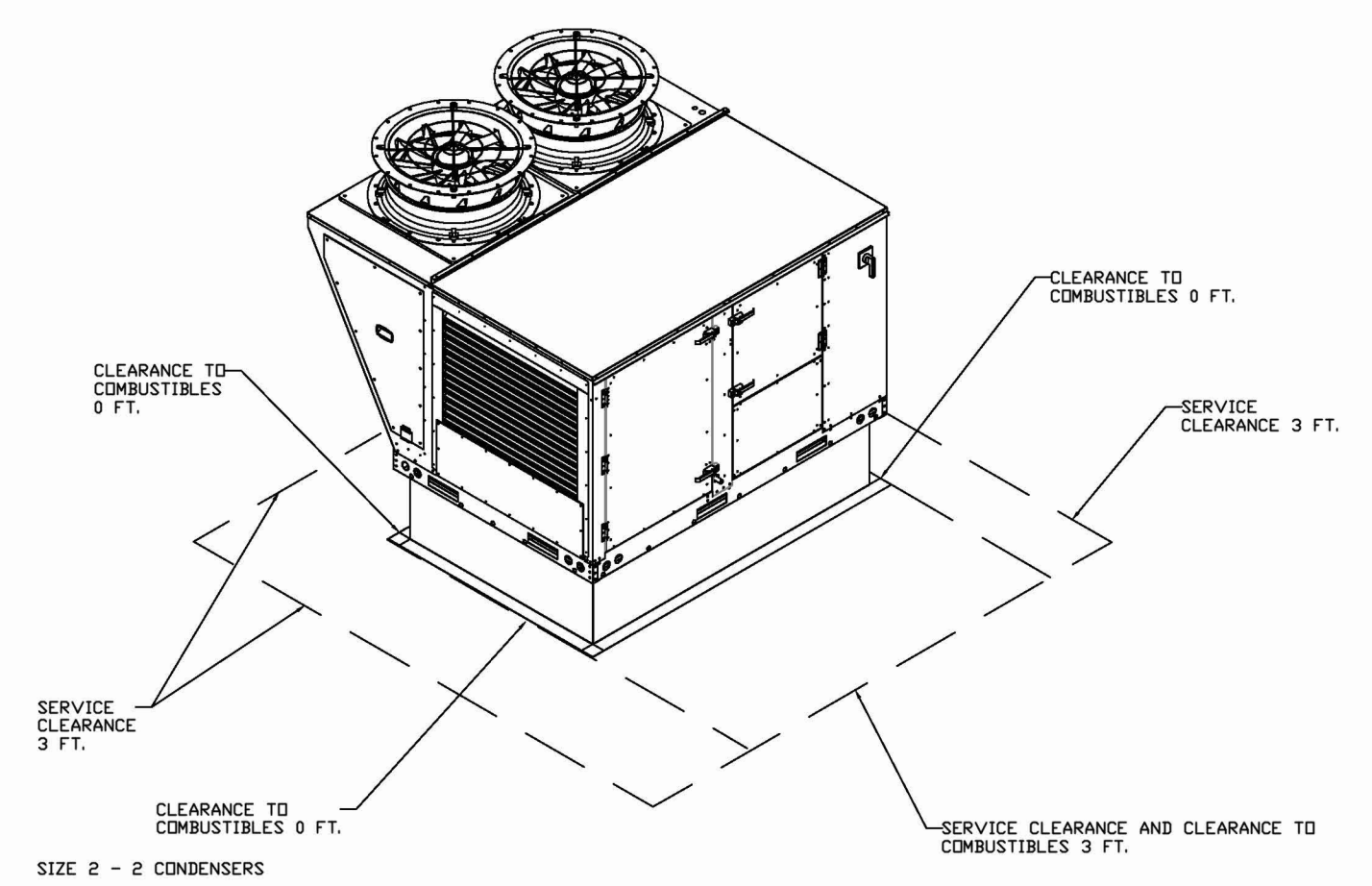
FAN UNIT NO	TAG	QTY	FAN INFORMATION										ELECTRICAL INFORMATION										COOLING INFORMATION										REHEAT INFORMATION										GAS HEAT INFORMATION										NOTES
			MANUFACTURER	BLDWER	RETURN AIR CFM	MAX OUTSIDE AIR CFM	TOTAL CFM	WEIGHT (LBS)	ESP	HP	PHASE	VOLT	MCA	MDCP	OUTSIDE AIR DB	MIXED AIR DB	LEAVING AIR DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB	DISCHARGE DB	REHEAT DB												
1	RTU-1	1	CAS-HVAC2-1150-10-10T	CAPTIVEAIRE	18M-2-RTU	1700	900	2600	1983	0.800	3.00	3	208	60.9A	70A	88.9°F	73.0°F	79.8°F	66.4°F	50.5°F	50.4°F	50.4°F	122.0 MBH	82.8 MBH	18.6	4.3	75.0°F	62.5°F	71 MBH	96 MBH	35.0 LBS/HR	NATURAL	143009	115837	40°F	7 IN. W.C. - 14 IN. W.C.	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18																
2	RTU-2	1	CAS-HVAC3-1250-24-15T	CAPTIVEAIRE	24M-3-RTU	2600	1400	4000	2691	0.800	5.00	3	208	75.2A	90A	88.9°F	73.0°F	79.9°F	66.5°F	51.6°F	51.5°F	51.5°F	178.6 MBH	122.9 MBH	18.8	5.7	75.0°F	62.5°F	104 MBH	129.6 MBH	49.3 LBS/HR	NATURAL	220012	178210	40°F	7 IN. W.C. - 14 IN. W.C.	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18																

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

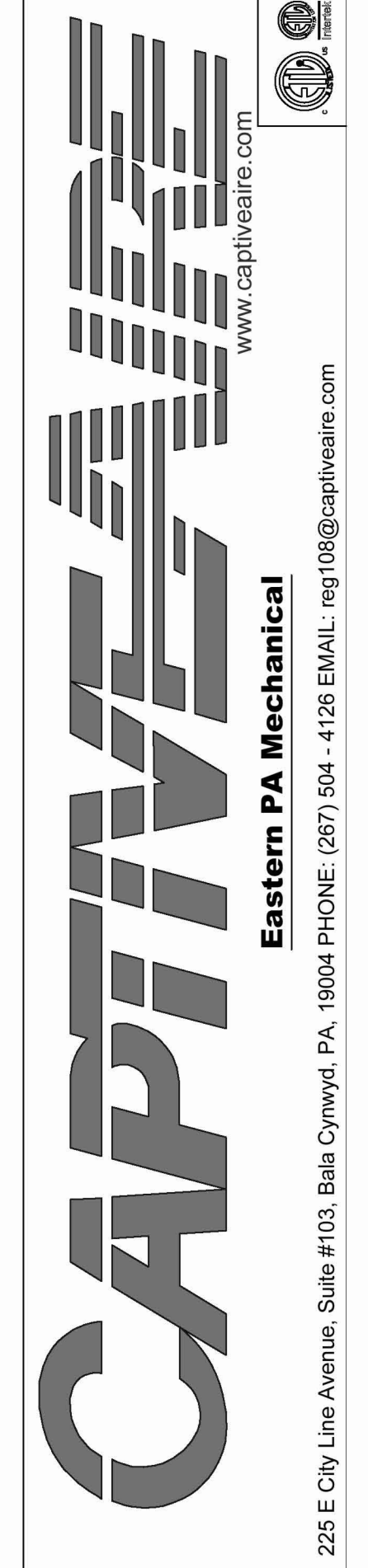
FAN UNIT NO	TAG	QTY	DESCRIPTION
1	RTU-1	1	1 INLET PRESSURE GAUGE, 0-25"
			1 MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE
			1 TOTAL CFM MONITORING
			1 INTAKE FIRESTAT SET TO 135°F
			1 FREEZE/STAT
			1 DISCHARGE FIRESTAT SET TO 240°F
			1 SHIP LOOSE GAS STRAINER 3/4"
			1 SINGLE POINT ELECTRICAL CONNECTION FOR RTU, 750VA TRANSFORMER USED, IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #20, #47, #44, OR #21 PREWIRE OPTION MUST BE SELECTED, DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
			1 CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
			1 CONSTRUCTION MODE - MODIFIES START-UP SETTINGS TO ALLOW TEMPERING A BUILDING STILL UNDER CONSTRUCTION
			1 RTU2 DOWN DISCHARGE
			1 2" MERV 13 FILTERS FOR RTU2 (QTY: 4)
			1 2" MERV 8 FILTERS FOR RTU2 (QTY: 4)
			1 OVERHEAT STAT
			1 VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
			1 IS TON MODULATING COOLING OPTION, 208/230V, R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
			1 IS TON MODULATING REHEAT OPTION - SPACE DEWPOINT CONTROL - R410A
			1 RTU2 CURB DUCT HANGER
			1 120V FIRE INPUT
			1 BUILT MOUNTED SMOKE DETECTOR - SHIPS LOOSE
			1 OCCUPIED SCHEDULING
			1 LOW AMBIENT COOLING OPERATION - DOWN TO 0°F AMBIENT
			1 CLOGGED FILTER SWITCH - NOTIFICATION ON HMI
			1 RTU2 CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION, INCLUDES RECEPTACLE, COVER AND J-BOX
			1 RTU2 ECONOMIZER - DIFFERENTIAL ENTHALPY CONTROL
1 RTU2 ECONOMIZER BAROMETRIC RELIEF			
1 RTU2 INTAKE/RETURN DAMPER - MANUAL CONTROL VIA HMI			
1 RTU2 HALL GUARD			
1 RTU2 DOWN RETURN			
1 VAV PACKAGE W/ MANUAL/DDC CONTROL (571 VFD INCLUDED)			
5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)			
1 EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET			
2	RTU-2	1	1 INLET PRESSURE GAUGE, 0-25"
			1 MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE
			1 TOTAL CFM MONITORING
			1 INTAKE FIRESTAT SET TO 135°F
			1 FREEZE/STAT
			1 DISCHARGE FIRESTAT SET TO 240°F
			1 SHIP LOOSE GAS STRAINER 1"
			1 SINGLE POINT ELECTRICAL CONNECTION FOR RTU, 750VA TRANSFORMER USED, IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #20, #47, #44, OR #21 PREWIRE OPTION MUST BE SELECTED, DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
			1 CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
			1 CONSTRUCTION MODE - MODIFIES START-UP SETTINGS TO ALLOW TEMPERING A BUILDING STILL UNDER CONSTRUCTION
			1 RTU3 DOWN DISCHARGE
			1 2" MERV 13 FILTERS FOR RTU3 (QTY: 4)
			1 2" MERV 8 FILTERS FOR RTU3 (QTY: 4)
			1 OVERHEAT STAT
			1 VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
			1 IS TON MODULATING COOLING OPTION, 208/230V, R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
			1 IS TON MODULATING REHEAT OPTION - SPACE DEWPOINT CONTROL - R410A
			1 RTU3 DOWN DISCHARGE
			1 OCCUPIED SCHEDULING
			1 RTU3 CURB DUCT HANGER
			1 120V FIRE INPUT
			1 COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
			1 LOW AMBIENT COOLING OPERATION - DOWN TO 0°F AMBIENT
			1 CLOGGED FILTER SWITCH - NOTIFICATION ON HMI
			1 RTU3 CONVENIENCE OUTLET (GFCI), 15 AMP - REQUIRES SEPARATE 120V CONNECTION, INCLUDES RECEPTACLE, COVER AND J-BOX
1 RTU3 ECONOMIZER - DIFFERENTIAL ENTHALPY CONTROL			
1 RTU3 ECONOMIZER BAROMETRIC RELIEF			
1 RTU3 INTAKE/RETURN DAMPER - MANUAL CONTROL VIA HMI			
1 RTU3 HALL GUARD			
1 RTU3 DOWN RETURN			
1 VAV PACKAGE W/ MANUAL/DDC CONTROL (571 VFD INCLUDED)			
1 ZIEHL POWERED EXHAUST FOR RTU3 - MANUAL CONTROL, 3000 CFM MAX AT 0"			
5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)			
1 EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET			

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	RTU-1	99 LBS	CURB	49.500"V X 75.000"X 14.000"H INSULATED
2	# 2	RTU-2	104 LBS	CURB	59.500"V X 91.000"X 14.000"H INSULATED

UNIT NUMBER	HMI #	HMI LOCATION	TEMP AVERAGING	MODBUS ADDRESS
FAN #1	HMI #1 - UNIT	IN UNIT	NOT AVERAGED	55
FAN #1	HMI #2 - SPACE	DINING ROOM	AVERAGED	56
FAN #1	HMI #3 - SPACE	MANGERS OFFICE	NOT AVERAGED	57
FAN #2	HMI #1 - UNIT	IN UNIT	NOT AVERAGED	55
FAN #2	HMI #2 - SPACE	KITCHEN	AVERAGED	56
FAN #2	HMI #3 - SPACE	MANGERS OFFICE	NOT AVERAGED	57



REVISIONS	DESCRIPTION	DATE
Δ		
Δ		
Δ		
Δ		



Shack Shack-1623-Greece,NY(HVAC)  
ROCHESTER, NY, 14626

DATE: 10/3/2024  
DWG.#: 7082962  
DRAWN BY: Joe.shilba  
SCALE: 1/2" = 1'-0"  
MASTER DRAWING

SHEET NO. 1

NOTE:  
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NOTE:  
EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS & SITE VISITS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.

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**Bergmeyer**  
CONSULTANTS  
800 South Figueroa St.  
Los Angeles, CA 90017  
213.337.1090  
www.bergmeyer.com

SEAL SIGNATURE:  
FOR REFERENCE ONLY

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A	HNY	2025-03-03	Addendum A
HNY		2024-11-19	Permit Set
HNY		2024-10-21	75% SET

**SHAKE SHACK**

SHAKE SHACK GREECE  
2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623

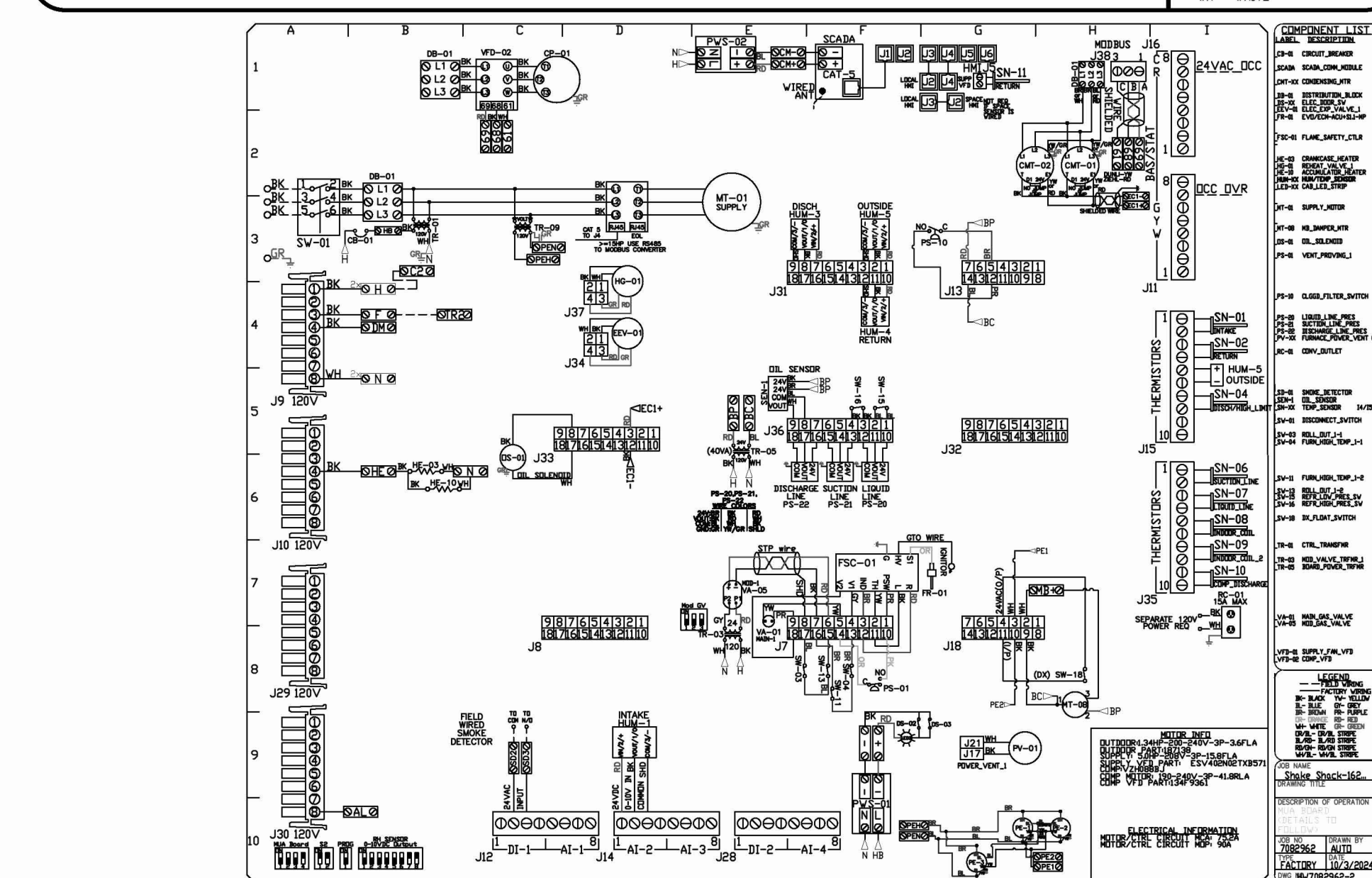
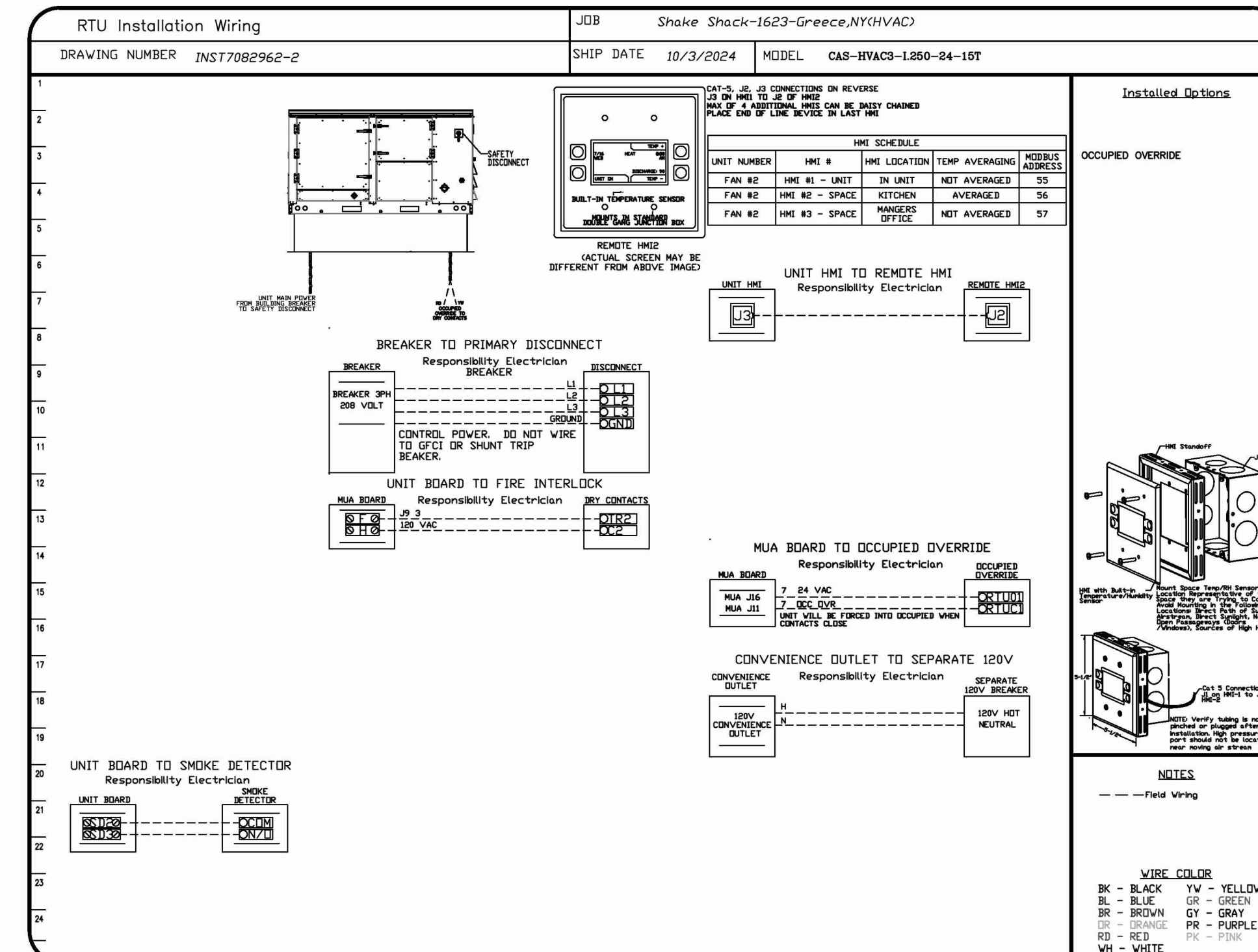
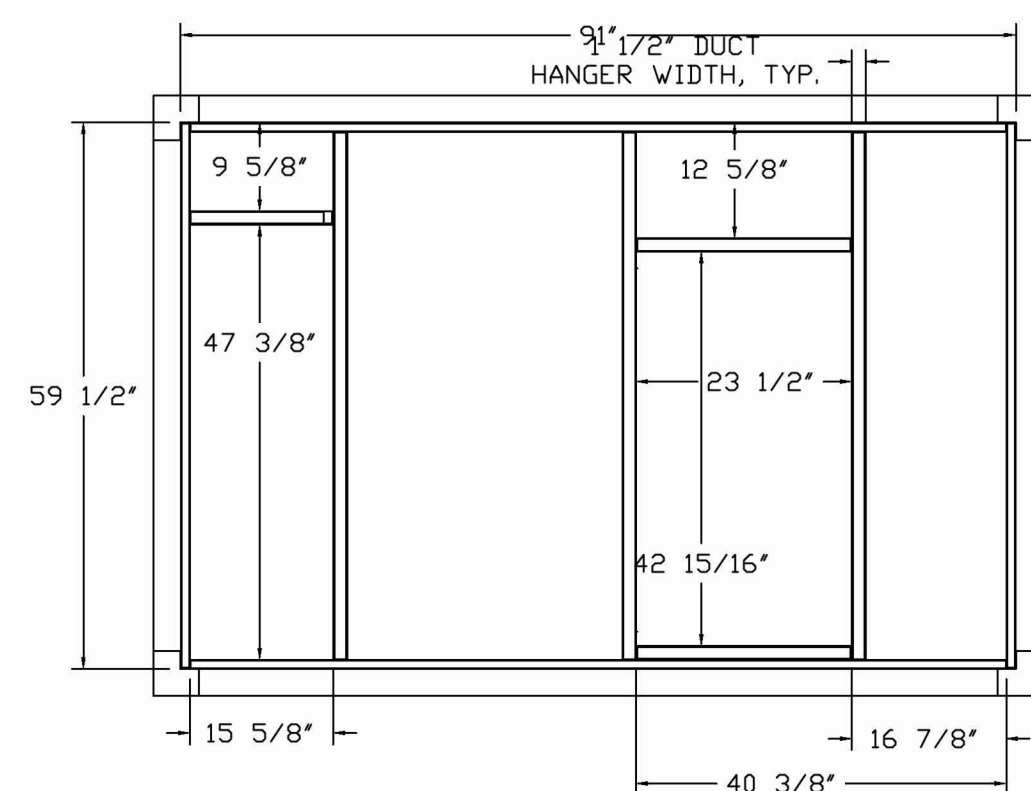
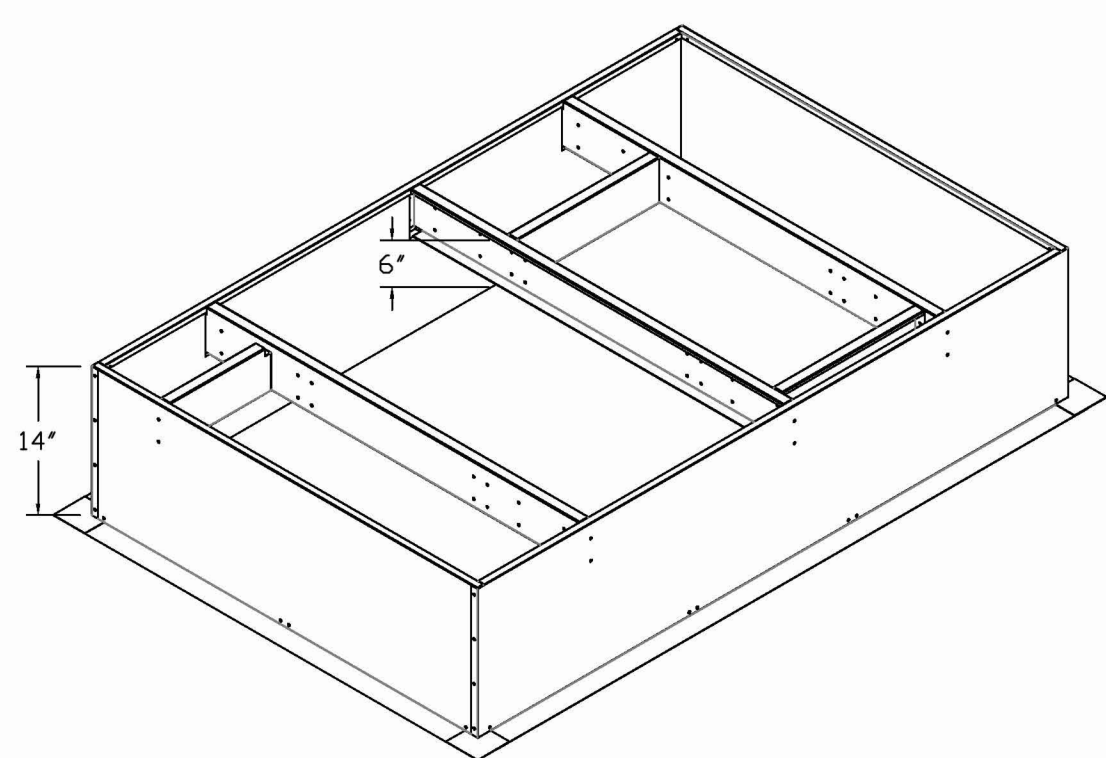
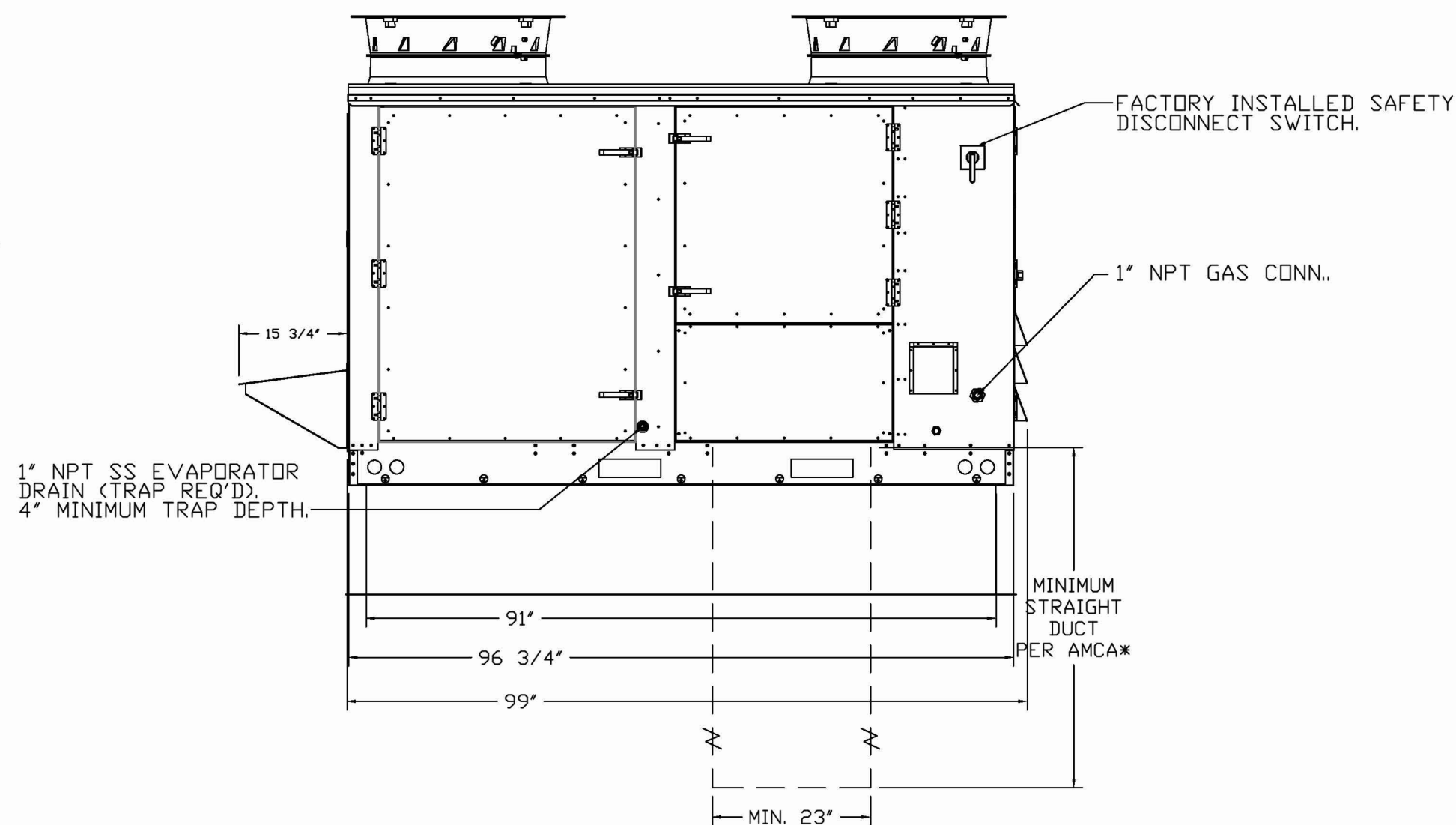
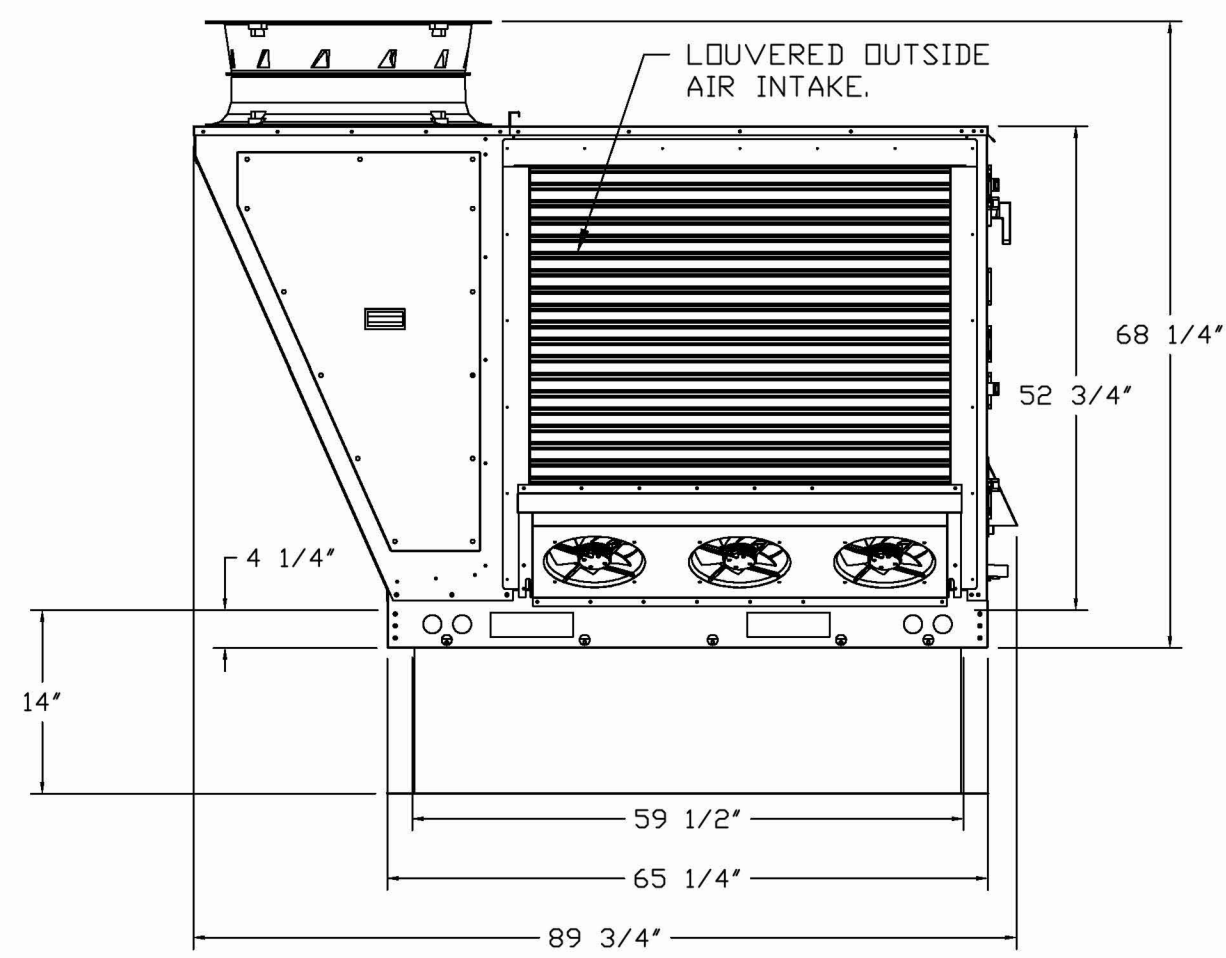
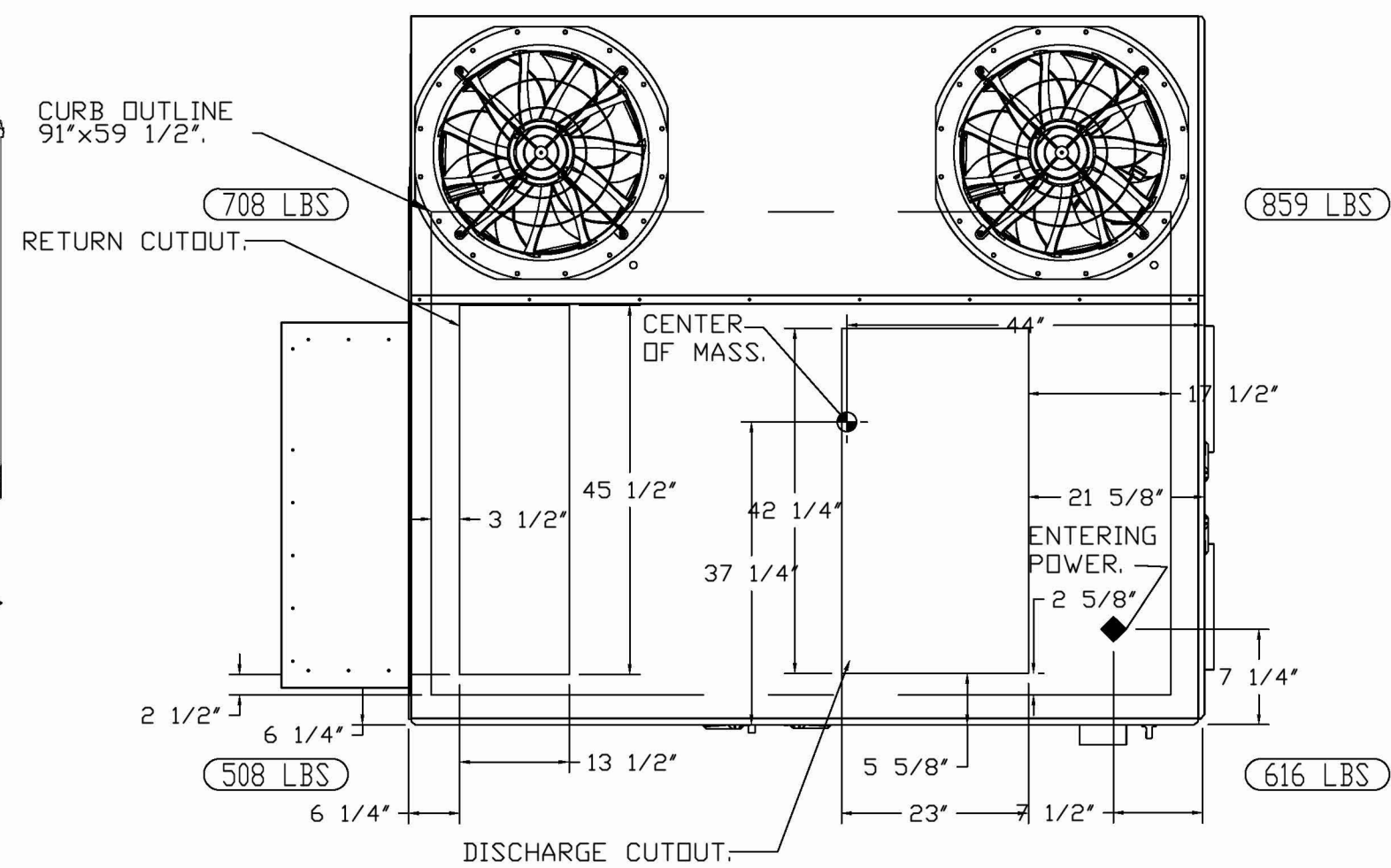
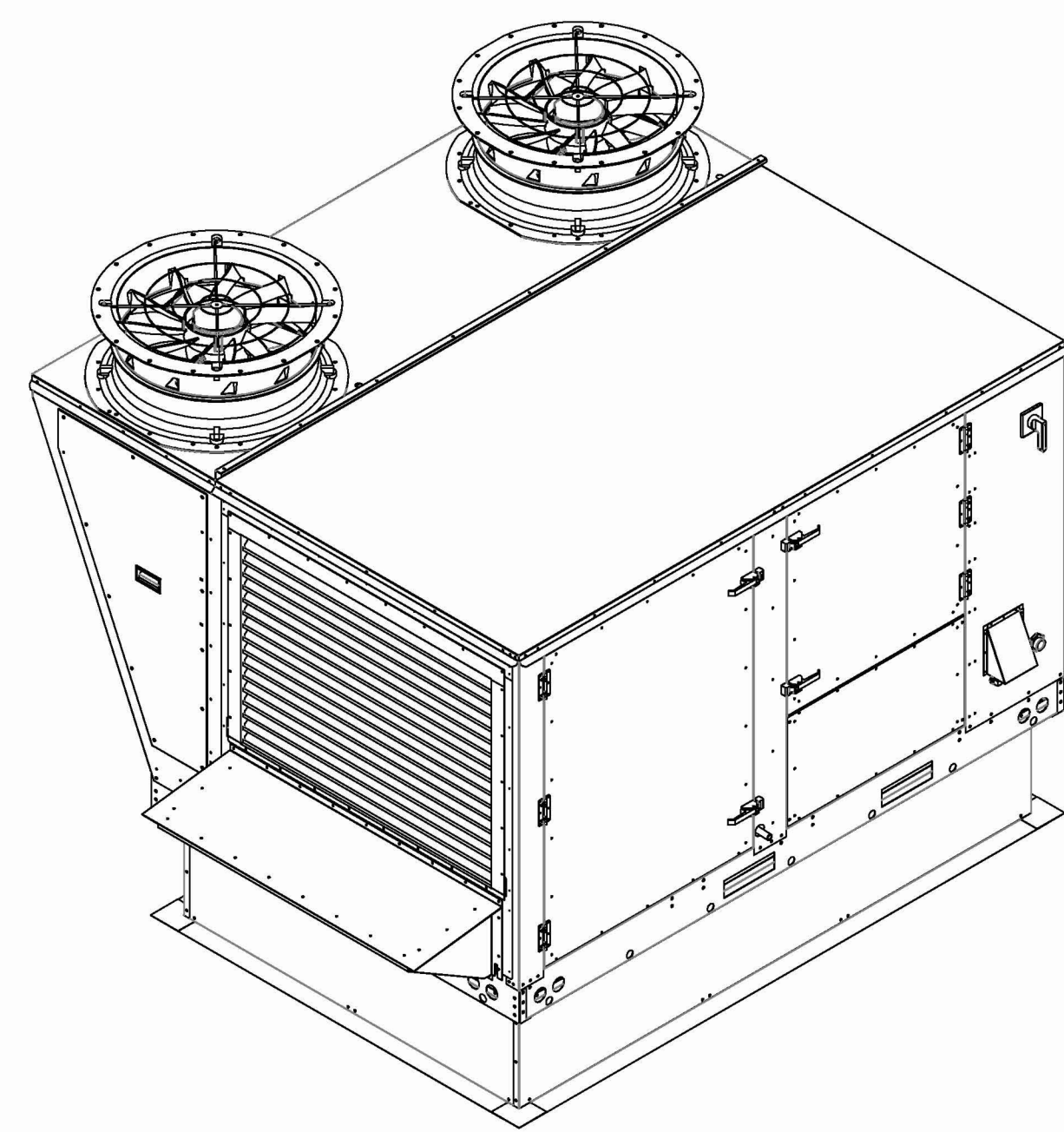
IFC SET

CAPTIVEAIRE DRAWINGS

DRAWN BY: EHC  
CHECKED BY: JH  
JOB NO: 20240150.00

M707





FAN #2 CAS-HVAC3-1250-24MF-15T - HEATER (RTU-2)

- NOTES:
- DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
  - DENOTES CORNER WEIGHT.
  - ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.
  - CONNECTION FROM BREAKER TO UNITS SAFETY DISCONNECT SWITCH TO BE COPPER WIRE ONLY.
  - EXTERIOR GAS CONNECTION PROVIDED BY FACTORY WITH QUICK SEAL AND ANTI-ROTATION BRACKET.

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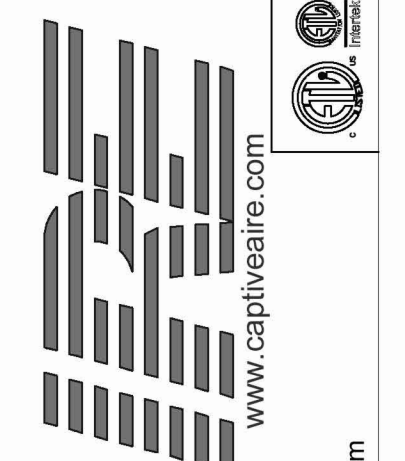
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REVISIONS	DESCRIPTION	DATE
1		
2		
3		



Shake Shack-1623-Greece,NY(HVAC)  
ROCHESTER, NY, 14626

225 E. City Line Avenue, Suite #103, Bala Cynwyd, PA, 19004  
PHONE: (267) 804-4126 EMAIL: reg108@captiveaire.com

DATE: 10/3/2024  
DWG.#: 7082962  
DRAWN BY: Joe.shilba  
SCALE: 1/2" = 1'-0"  
MASTER DRAWING

SHEET NO. 3

**Bergmeyer**

800 South Figueroa St.  
Los Angeles, CA 90017  
213.337.1890

275 N High St.  
Boston, MA 02210  
380.900.8887  
617.542.1025

CONSULTANTS:

SEAL SIGNATURE:

FOR REFERENCE ONLY

NO.	BY	DATE	DESCRIPTION
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A	HNY	2025-03-03	Addendum A
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SHAKE SHACK

SHAKE SHACK GREECE

2167 W RIDGE ROAD,  
GREECE, N.Y. 14626  
SHACK #1623

IFC SET

CAPTIVEAIR DRAWINGS

DRAWN BY: EHC  
CHECKED BY: JH  
JOB NO: 20240158.00

M709