



**MECHANICAL PLAN NOTES:**

- TYPE I GREASE HOOD EXHAUST DUCTWORK SHALL BE MINIMUM 16 GAUGE STEEL OR MINIMUM 16 GAUGE STAINLESS STEEL WITH LIQUID TIGHT WELDS. 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 AS REQUIRED TO COORDINATE WITH 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.
- 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.
- PROVIDE RA DUCT THROUGH ROOF. FULL SIZE OF UNIT OPENING, AND CONNECT TO UNIT WITH FLEXIBLE CONNECTOR.
- PROVIDE SA DUCT THROUGH ROOF. FULL SIZE OF UNIT OPENING, AND CONNECT TO UNIT WITH FLEXIBLE CONNECTOR.
- MOUNT THERMOSTATS AND TEMPERATURE SENSOR(S) 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.
- REFER TO HALTON SHEETS FOR DUCT CONNECTION SIZES.
- PROVIDE MAKEUP AIR SUPPLY DUCT THROUGH ROOF. FULL SIZE OF UNIT OPENING, AND CONNECT TO UNIT WITH FLEXIBLE CONNECTOR.
- 12"x12" GREASE EXHAUST DUCT UP TO KEF-1 ON ROOF.
- 12"x12" GREASE EXHAUST DUCT UP TO KEF-2 ON ROOF.
- MOUNT TEMPERATURE SENSOR PROVIDED WITH KITCHEN EXHAUST HOODS ON WALL.
- INSTALL "DUCTMATE ULTIMATE DOOR" GREASE DUCT ACCESS PANELS FOR CLEANING IN LOCATION SHOWN AT A MINIMUM AND AS REQUIRED BY NFPA 96 AND LOCAL CODES.
- REFRIGERANT PIPING UP TO CU-1 ON ROOF, REF. 1/M150. UP TO EF-2 ON ROOF.
- INSTALL COMBUSTION AIR AND EXHAUST SYSTEM PER MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS AND IN COMPLIANCE WITH LOCAL CODES. MAINTAIN A MINIMUM 10'-0" SEPARATION FROM ALL AIR INTAKES.
- PROVIDE CONCENTRIC VENT MODEL NUMBER IPEX #PVC-UCVK.
- PROVIDE LOUVER IN DOOR AS MEANS OF AIR TRANSFER IN THE EVENT OF ACCESS CARBON MONOXIDE OR CARBON DIOXIDE DETECTION. BOTTOM OF LOUVER, 6" ABOVE BOTTOM OF DOOR.
- PROVIDE ANALOX AX80 OR APPROVED EQUAL CARBON DIOXIDE SENSOR WITH REMOTE ALARM REPEATER TO BE MOUNTED AT 18" AFF. PROVIDE CARBON DIOXIDE SENSOR WITH RELAY. RELAY SHALL BE INTERLOCKED WITH THE BUILDING FIRE ALARM SYSTEM. THE SENSOR SHALL BE EQUIPPED WITH A LOCAL AUDIBLE AND VISUAL ALARM. THE LOW LEVEL ALARM SHALL ACTIVATE THE LOCAL AUDIBLE AND VISUAL ALARM. THE HIGH LEVEL ALARM SHALL ACTIVATE RELAY. INSTALL SENSOR PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- CARBON MONOXIDE DETECTOR FURNISHED BY OWNER. INSTALL AT 5'-0" AFF. COORDINATE FINAL LOCATION WITH OWNER REPRESENTATIVE.
- UP TO EF-1 ON ROOF.
- MOUNT RETURN AIR DUCTWORK TIGHT TO TOP OF SUPPLY DUCT. 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.
- MOUNT SUPPLY AIR DUCTWORK TIGHT TO BOTTOM OF STRUCTURE.

ALL GREASE DUCT TO BE WATER TESTED BY ENVIROMATIC AT MECHANICAL CONTRACTOR'S EXPENSE. CONTACT OWNER'S NATIONAL ACCOUNT VENDOR\*

ENVIROMATIC  
DON PFLEDERER  
1.800.325.8419  
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@NATIONALTAB.COM  
955-862-8822 ext1704

STORE NO:  
**1366**

**SHAKE SHACK**  
KENTLANDS SQUARE  
1518 KENTLANDS SQUARE  
CANTERSBURG, MD 20617

| REVISION |             |               |
|----------|-------------|---------------|
| DATE     | DESCRIPTION | CITY COMMENTS |
| 04/08/21 |             |               |
| 05/03/21 |             |               |

STATUS:  
**PERMIT / BID SET**



05/03/2021

FIELD VERIFICATION:  
The contractor shall verify all signed dimensions and location of the project site and notify Zebra Architecture, LLC of any dimensional errors, or omissions of work. Do not commence field operations or fabricating any work. Do not proceed with any work until all field verification is complete.

COPYRIGHT © 2021:  
Zebra Architecture, LLC, shall retain all common law, statutory and all other intellectual property rights. Neither the documents nor the information herein is to be reproduced, distributed, disclosed or otherwise without the written consent of Zebra Architecture, LLC.

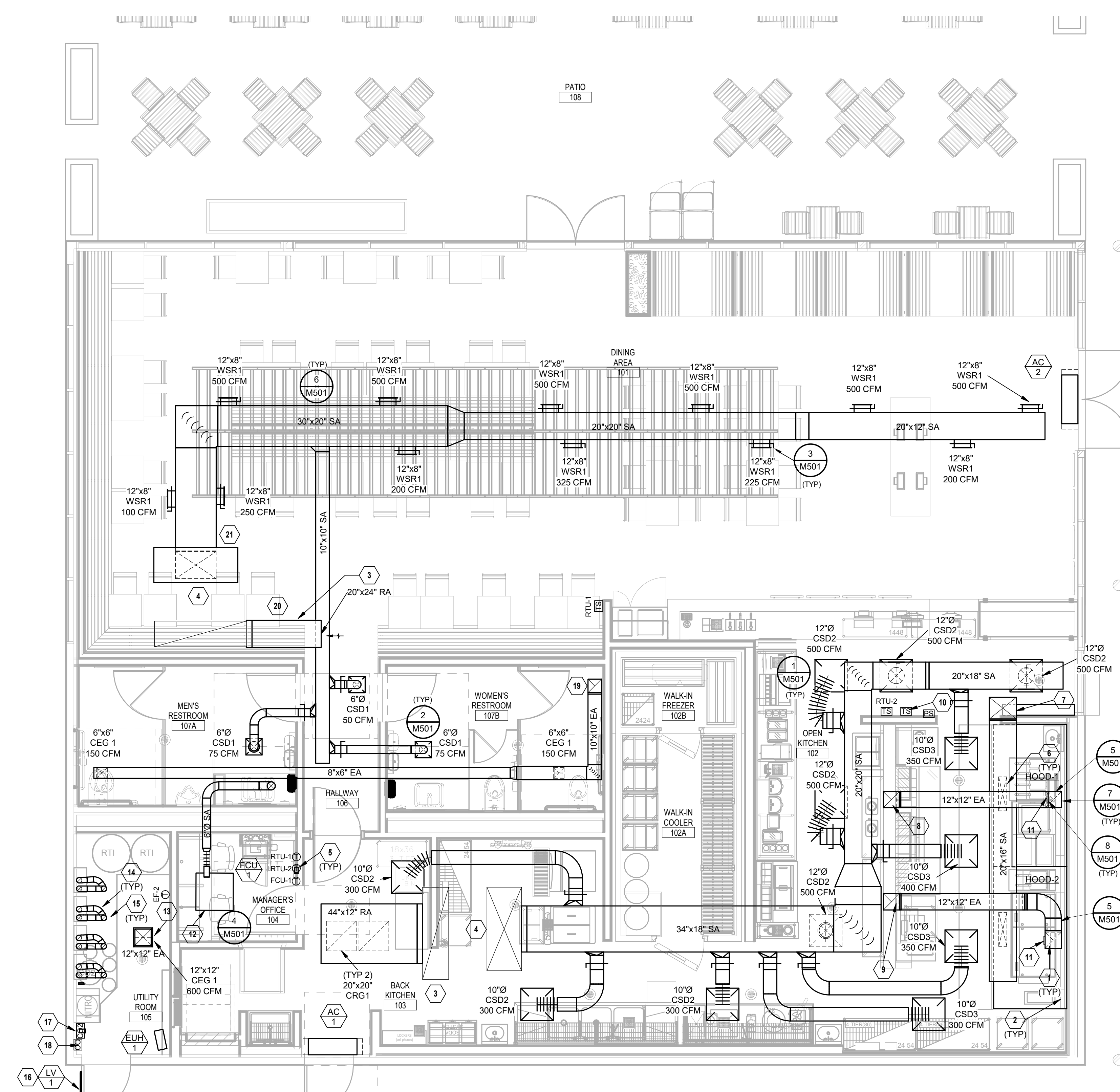
SHEET NAME:  
**MECHANICAL FLOOR PLAN**

DATE: 04/08/21 PROJECT NO: 2050004103

DRAWN: AJP SCALE: AS NOTED

SHEET NO:  
**M101**

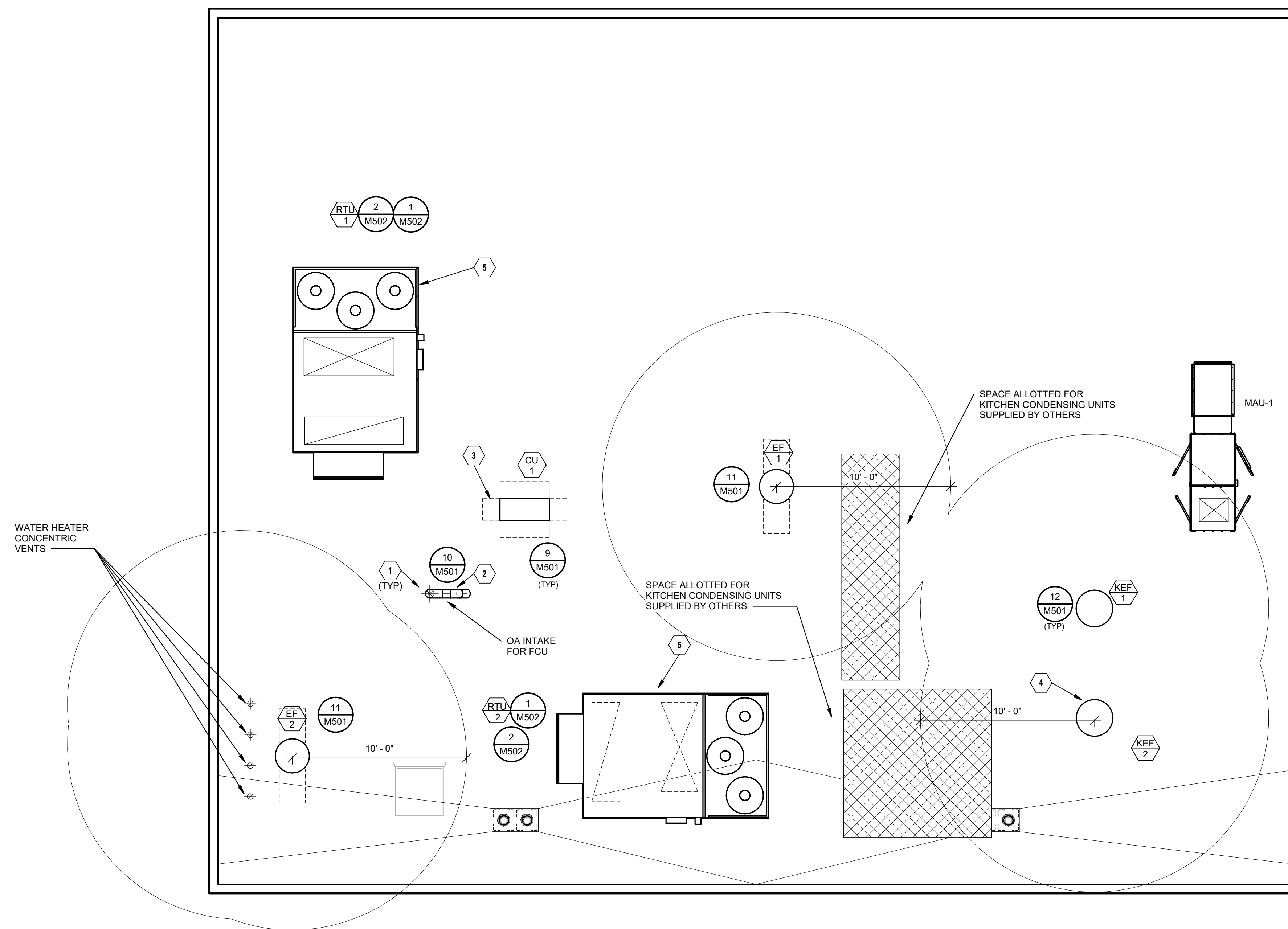
PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
PRINT NAME: JUSTIN M. OLDER  
LICENSE #: 62139  
EXPIRATION DATE: 1/8/2022



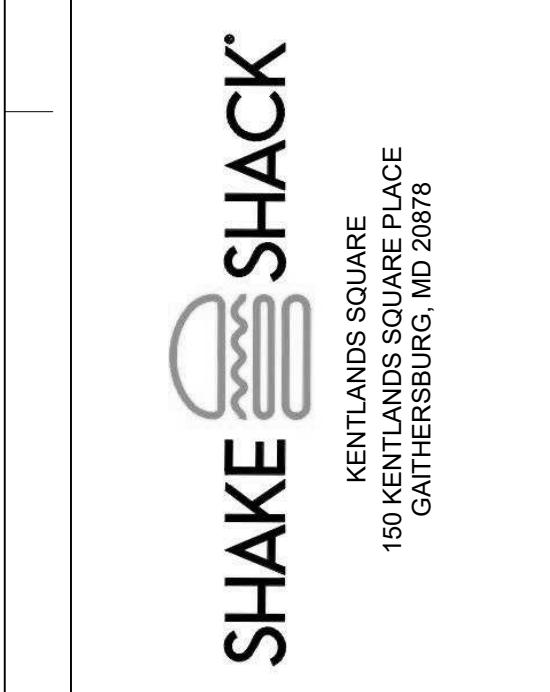
**1 MECHANICAL FLOOR PLAN NTS**

STORE NO:  
**1366**

- MECHANICAL PLAN NOTES:**
- 1 MAINTAIN ALL OUTSIDE AIR INTAKES A MINIMUM OF 10'-0" RADIUS FROM EXHAUST, TYPICAL.
  - 2 TURN DOWN 6"Ø INTAKE AND END OPEN OVER ROOF (MIN. 24") WITH INSECT SCREEN.
  - 3 CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
  - 4 REFER TO HALTON DRAWINGS FOR INFORMATION REGARDING GREASE FAN GUARDS.
  - 5 PROVIDE EQUIPMENT WITH NATIONAL TAB UV-PH INDOOR AIR PURIFICATION SYSTEM, MODEL PHH-PKG-24V. INSTALL IN UNIT BLOWER COMPARTMENT PER MANUFACTURERS INSTRUCTIONS.



**MECHANICAL ROOF PLAN**  
NTS



| REVISION |                 |
|----------|-----------------|
| DATE     | DESCRIPTION     |
| 04/08/21 | CITY COMMENTS   |
| 05/03/21 | OWNER REVISIONS |

STATUS:  
**PERMIT / BID SET**



05/03/2021

**FIELD VERIFICATION:**  
The contractor shall verify all signed dimensions and location of the project site and notify Zebra Architecture, LLC of any dimensional errors, or omissions on the documents before beginning or fabricating any work. Do not commence field operations or fabricating any work without this approval.

**COPYRIGHT © 2021:**  
Zebra Architecture, LLC, shall retain all common law, statutory and all other reserved rights. Neither the documents nor the information herein is to be reproduced, distributed, disclosed or otherwise without the written consent of Zebra Architecture, LLC.

**SHEET NAME:**  
**MECHANICAL ROOF PLAN**

**DATE:** 04/08/21  
**PROJECT NO:** 2050004103  
**DRAWN:** AJP  
**SCALE:** AS NOTED

**SHEET NO:**  
**M150**

**PROFESSIONAL CERTIFICATION**  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
**PRINT NAME:** JUSTIN M. OLDER  
**LICENSE #:** 52138  
**EXPIRATION DATE:** 1/8/2022

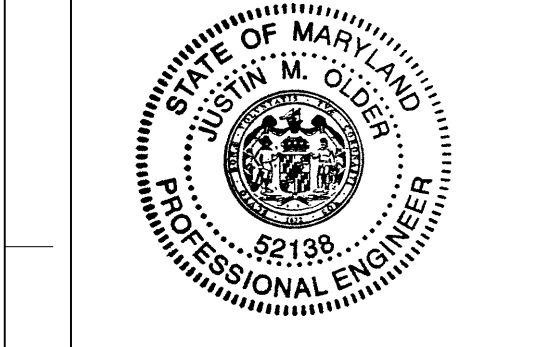
STORE NO: 1366

**SHAKE SHACK**  
KENTLANDS SQUARE  
1500 KENTLANDS SQUARE  
CANTERSBURG, MD 20612

**REVISION**

| NO | DATE     | DESCRIPTION     |
|----|----------|-----------------|
| 1  | 04/08/21 | CITY COMMENTS   |
| 2  | 05/03/21 | OWNER REVISIONS |

STATUS: PERMIT / BID SET



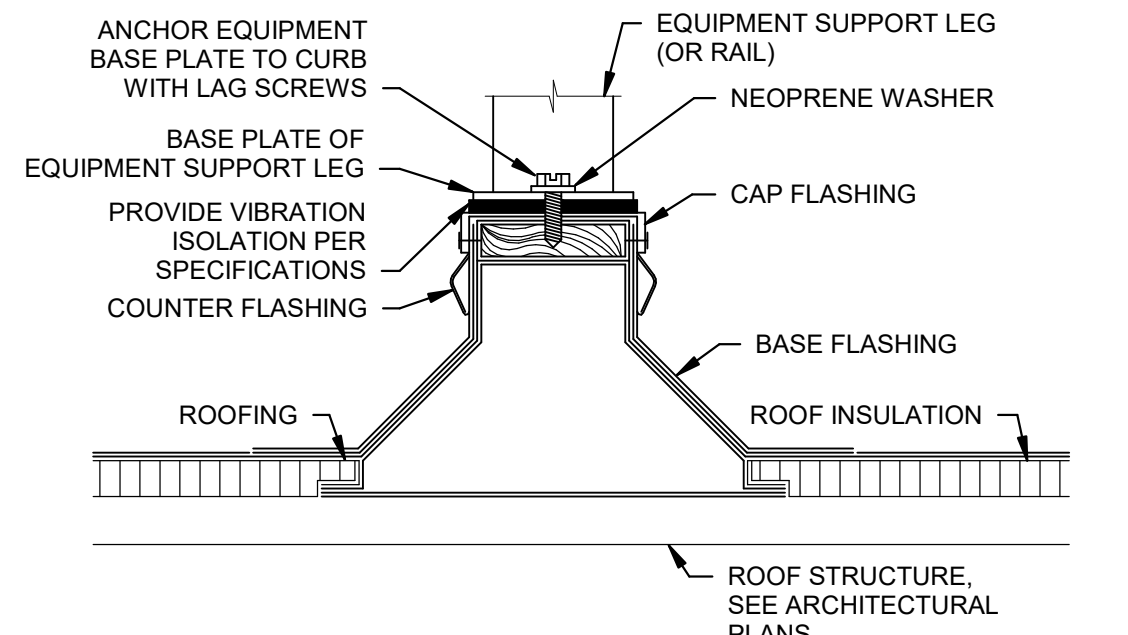
**FIELD VERIFICATION:**  
The contractor shall verify all signed dimensions and location of the project site and notify Zebra Architecture, LLC of any dimensional errors, or omissions or work. Do not proceed until approved by the Engineer of Record.  
COPYRIGHT © 2021:  
Zebra Architecture, LLC shall retain all common law, statutory and all other intellectual rights. Neither the documents nor the information herein is to be reproduced, distributed, disclosed or otherwise without the written consent of Zebra Architecture, LLC.

SHEET NAME: **MECHANICAL DETAILS**

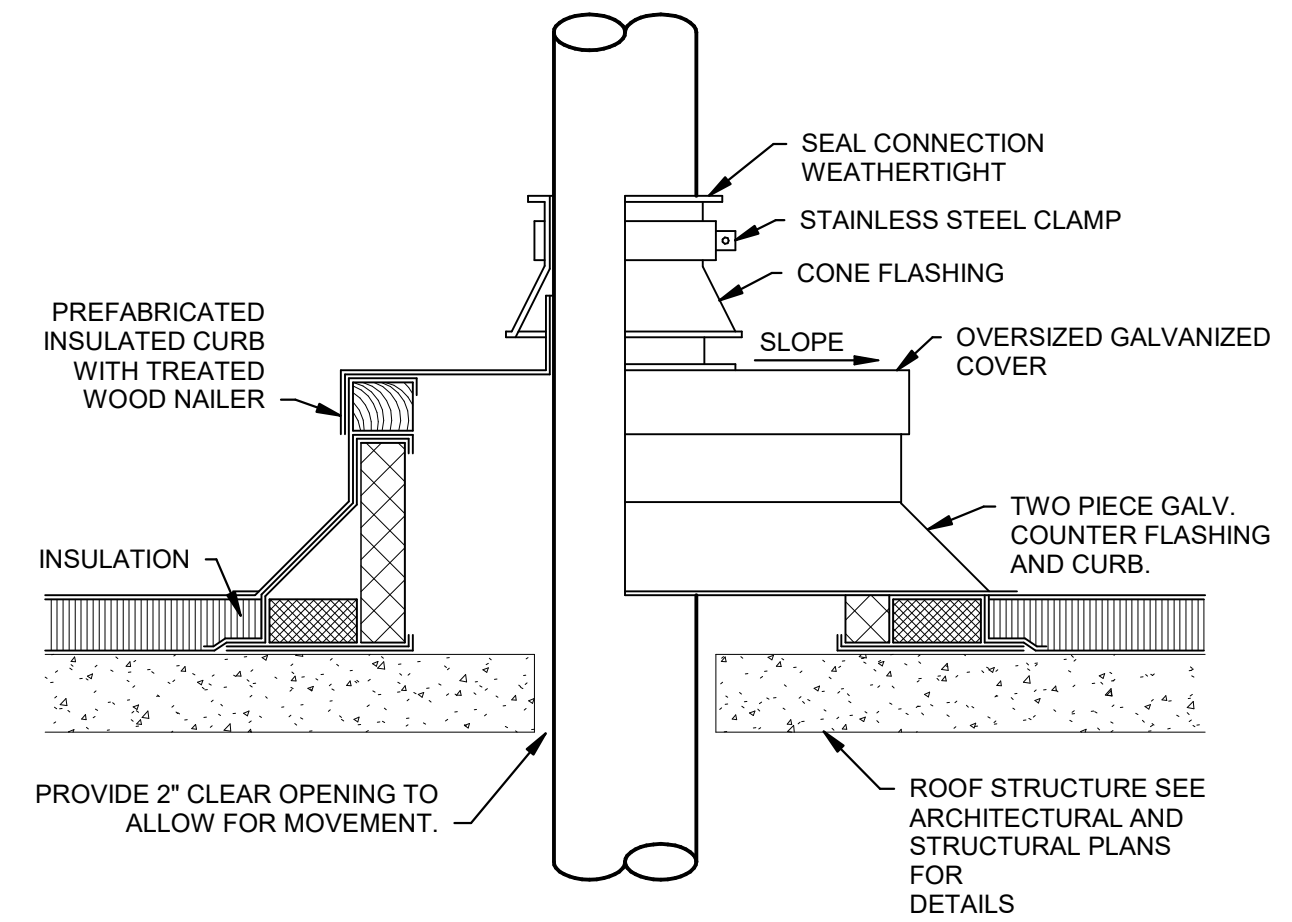
DATE: 04/08/21 PROJECT NO: 2050004103  
DRAWN: AJP SCALE: AS NOTED  
SHEET NO:

**M501**

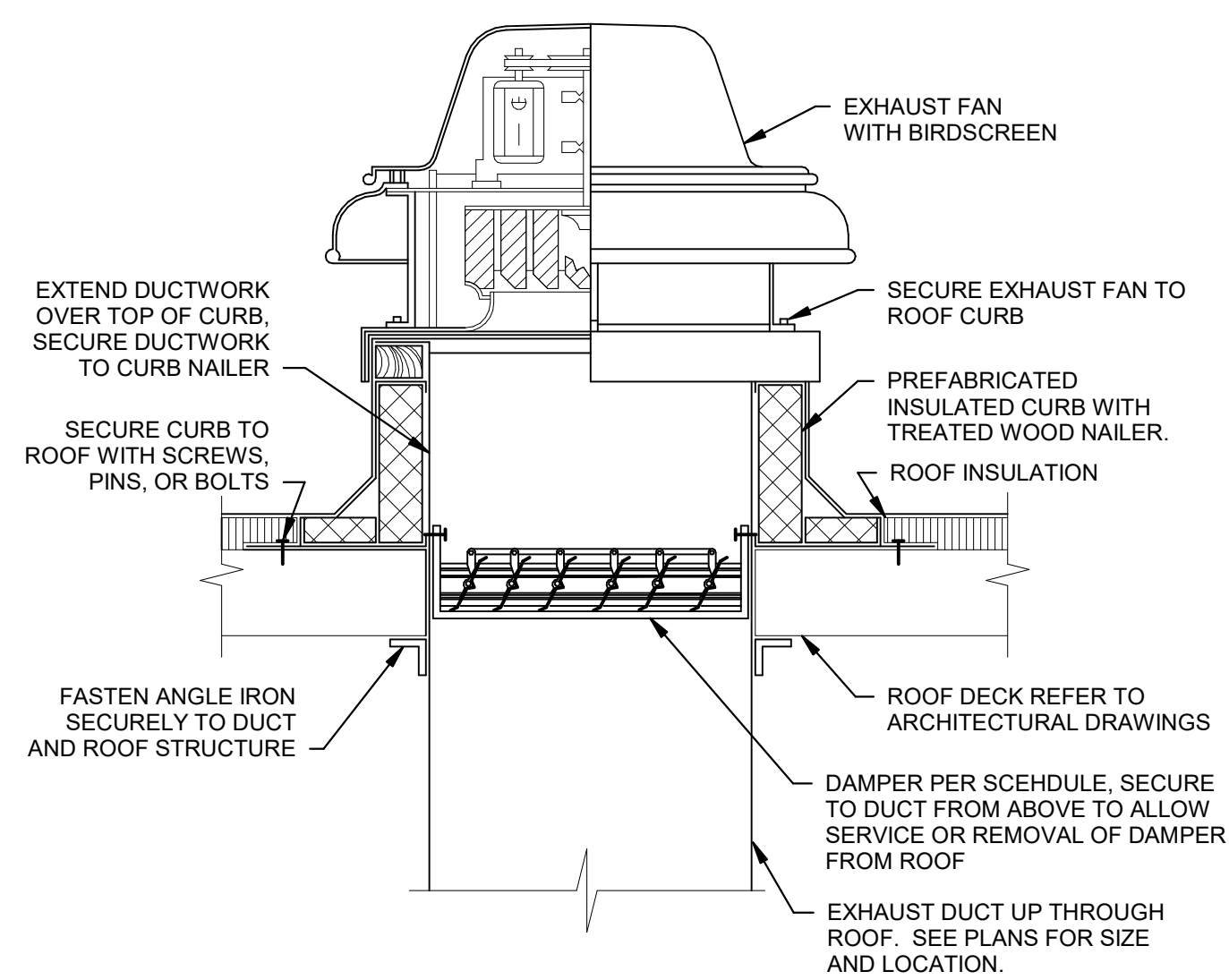
PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
PRINT NAME: JUSTIN M. OLDER  
LICENSE #: 52138  
EXPIRATION DATE: 1/8/2022



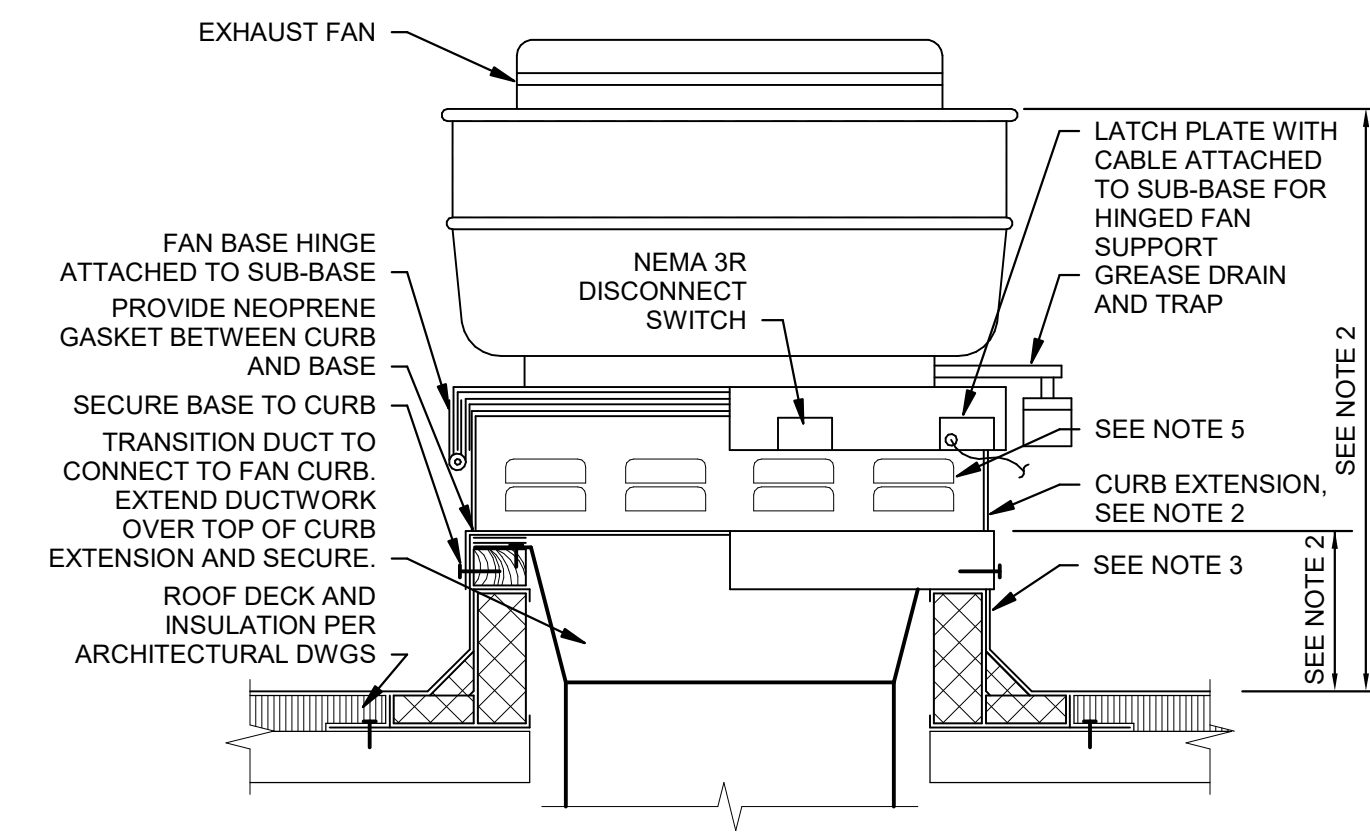
9 ROOF EQUIPMENT SUPPORT RAIL DETAIL NTS



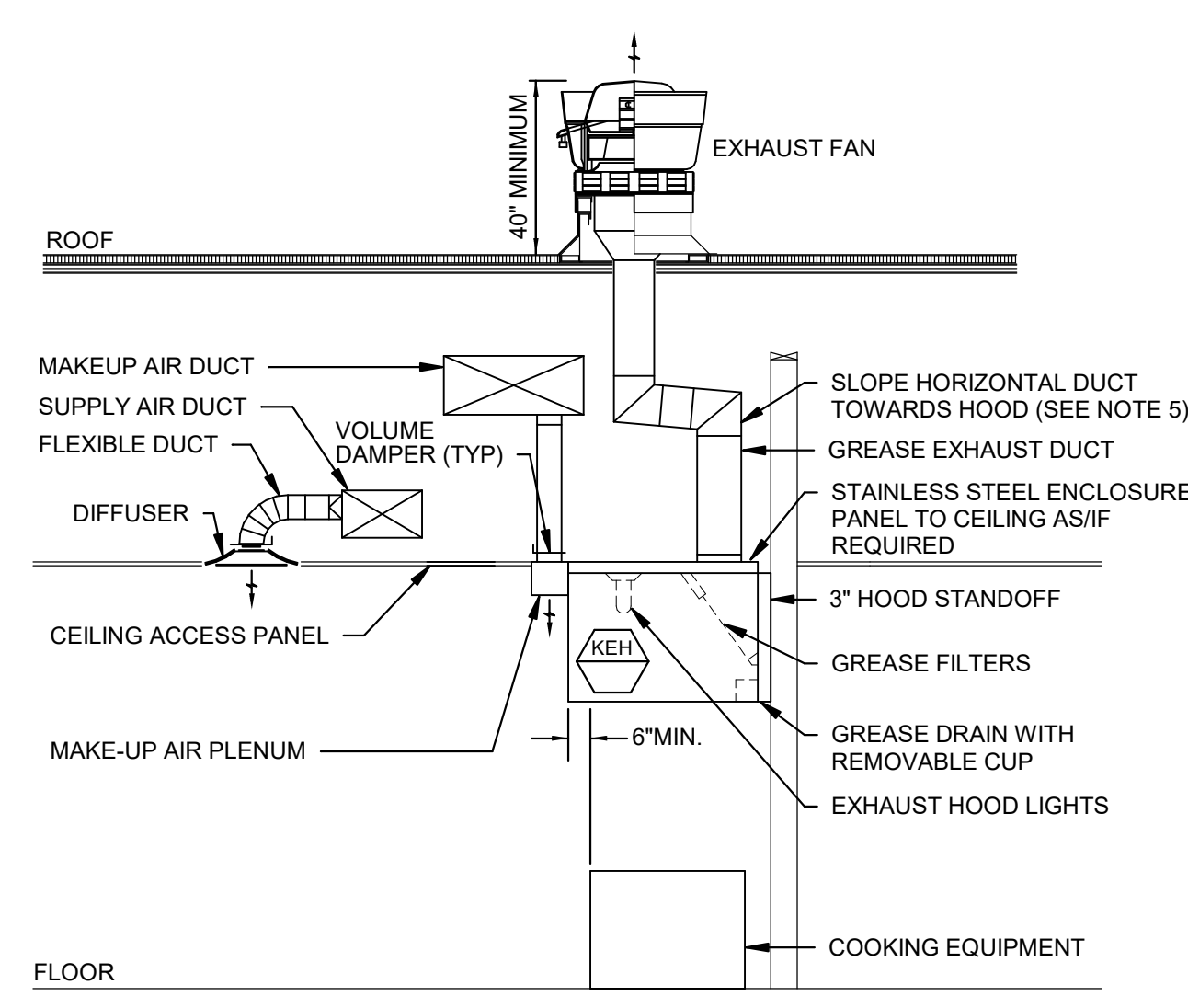
10 ROUND AIR DUCT OR PIPE PENETRATION THROUGH ROOF DETAIL NTS



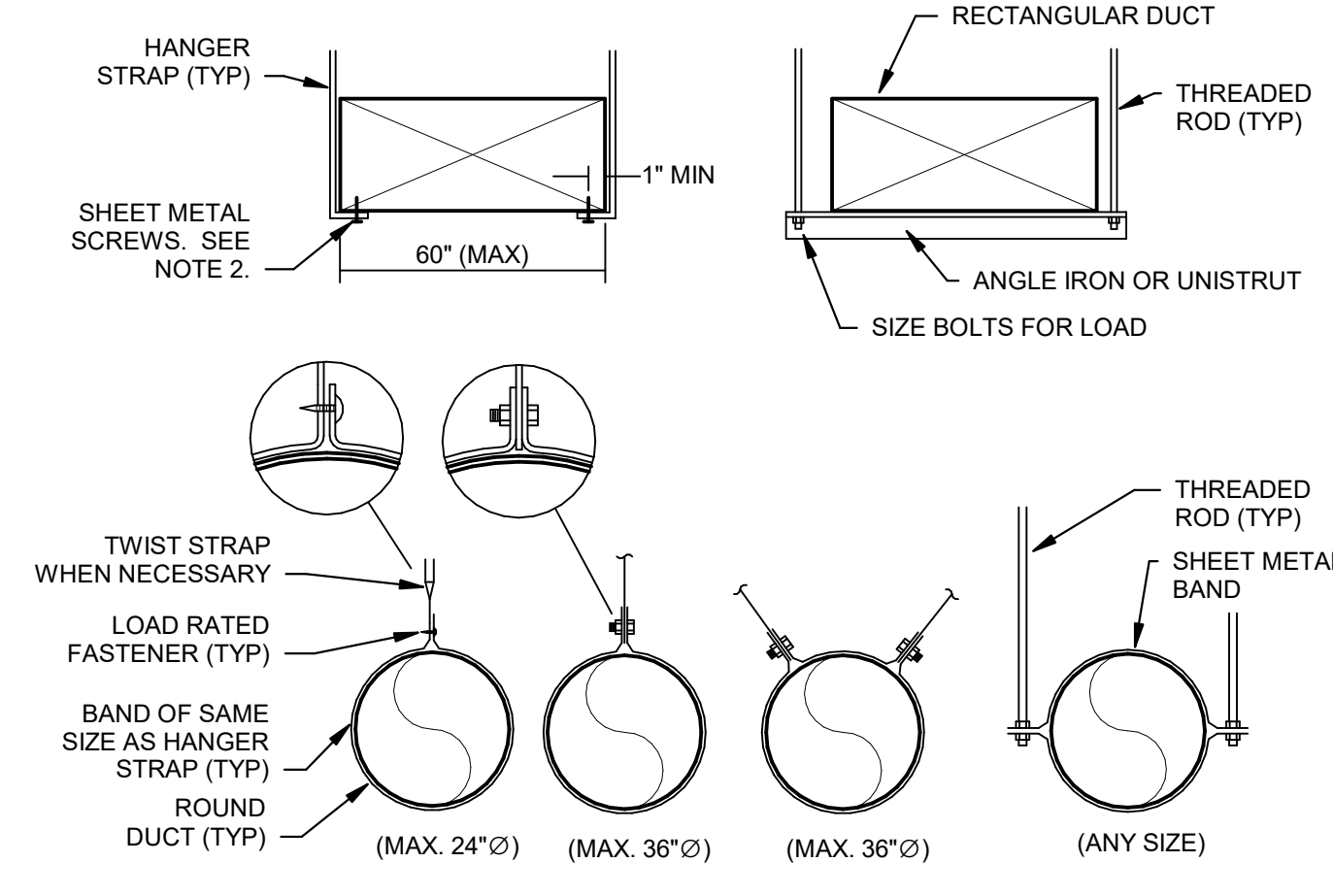
11 DOWNBLAST EXHAUST FAN DETAIL NTS



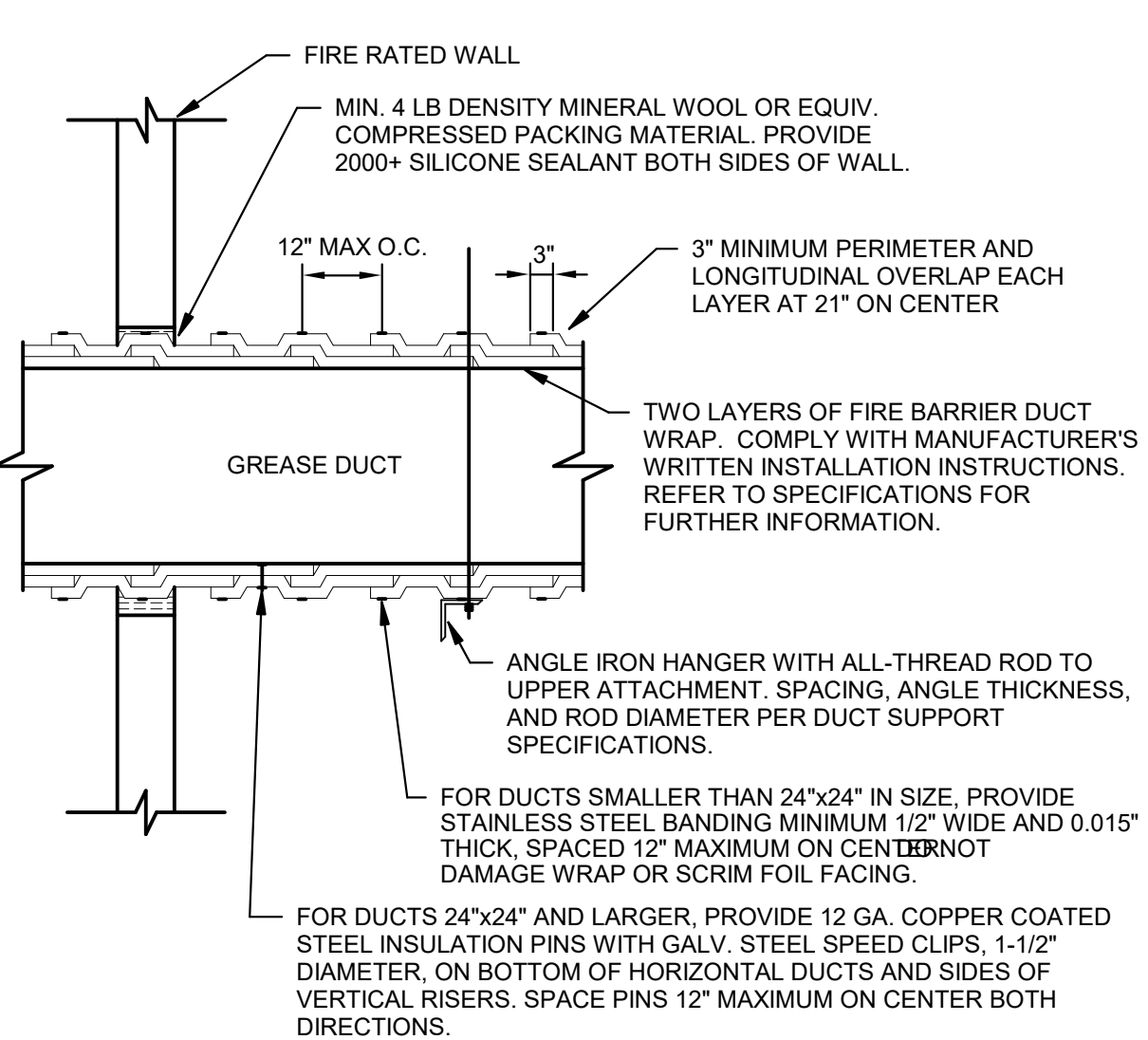
12 UPBLAST GREASE EXHAUST FAN DETAIL NTS



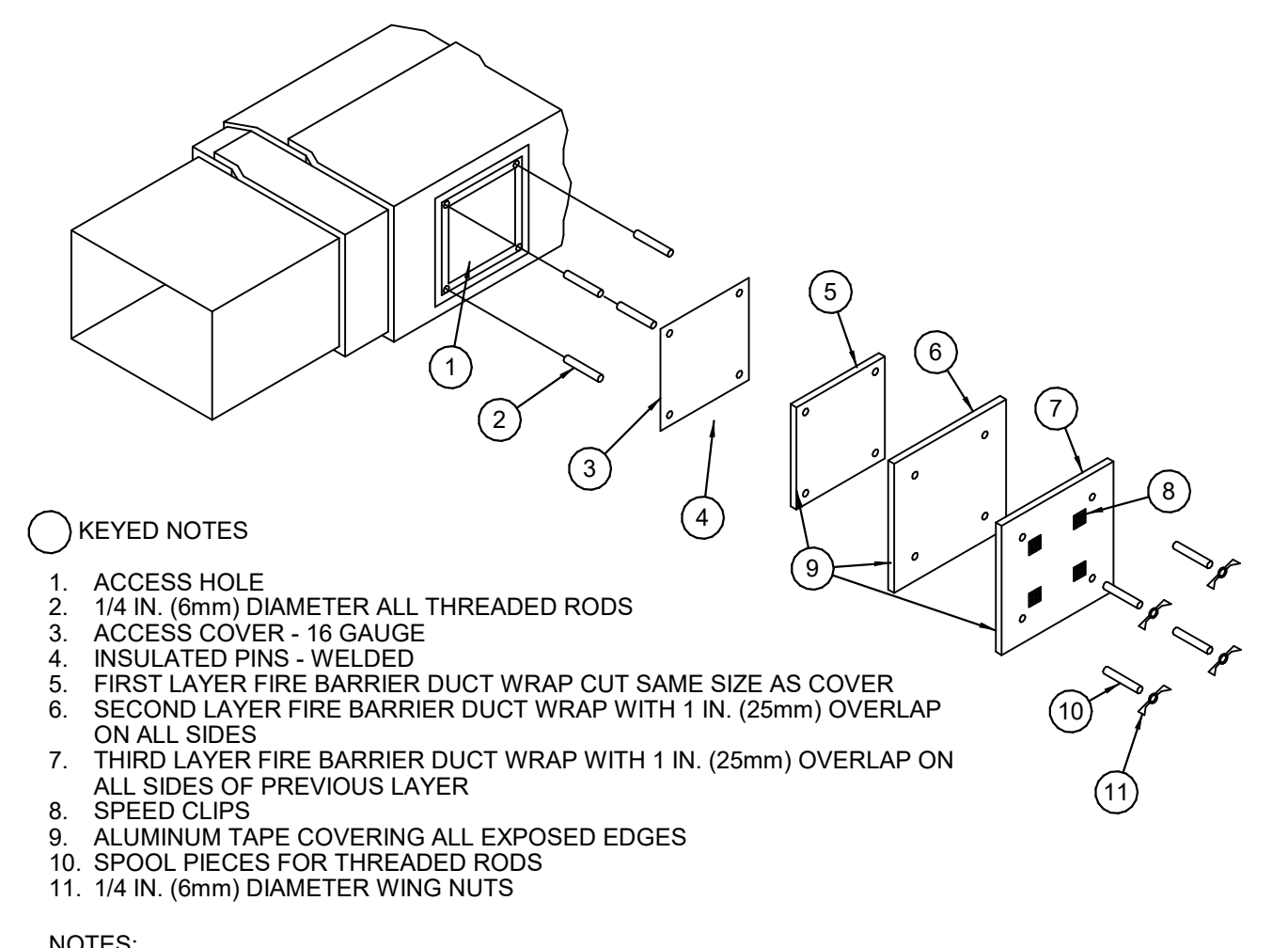
5 KITCHEN EXHAUST HOOD ELEVATION DETAIL NTS



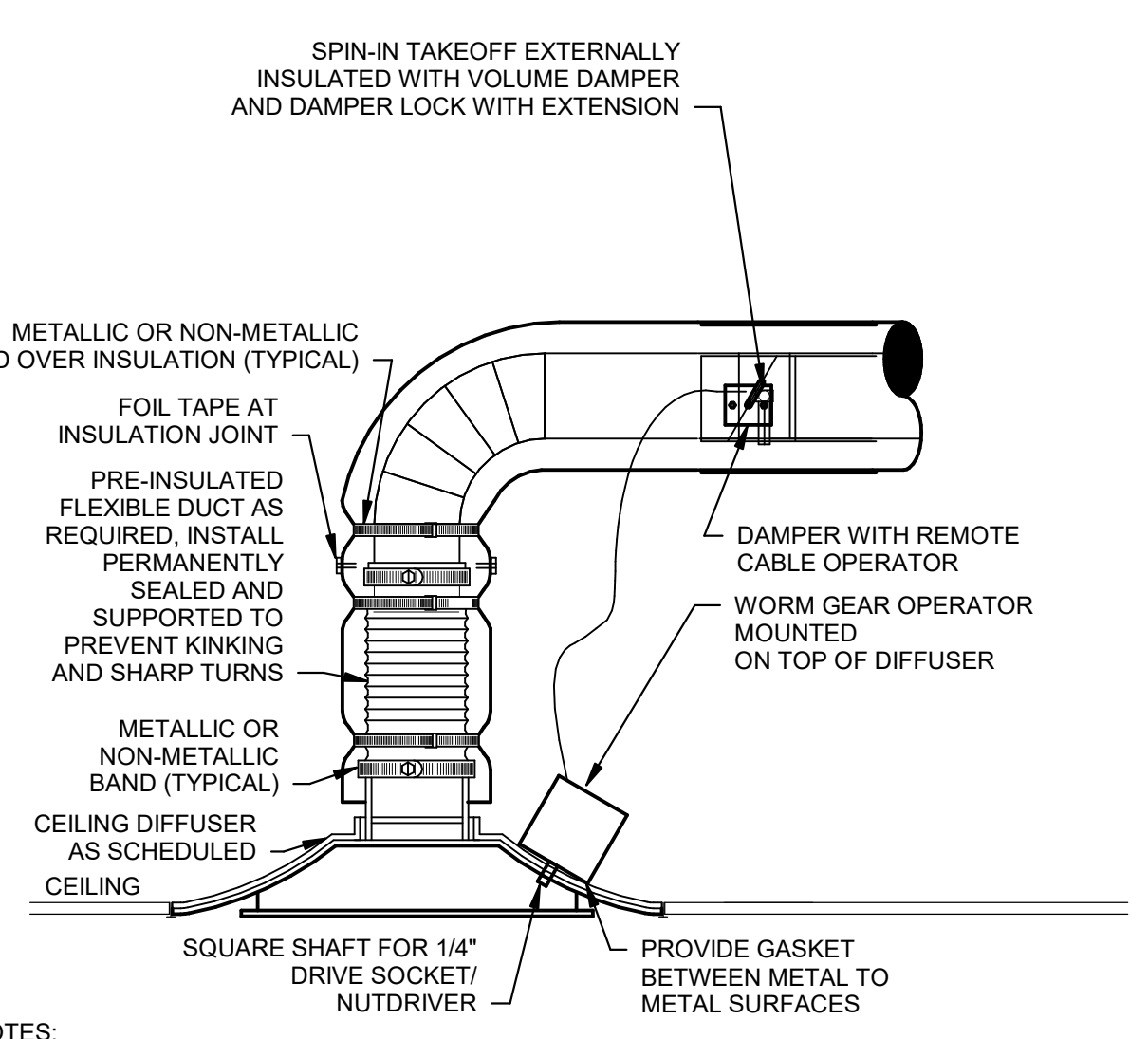
6 DUCT HANGER LOWER ATTACHMENT DETAILS NTS



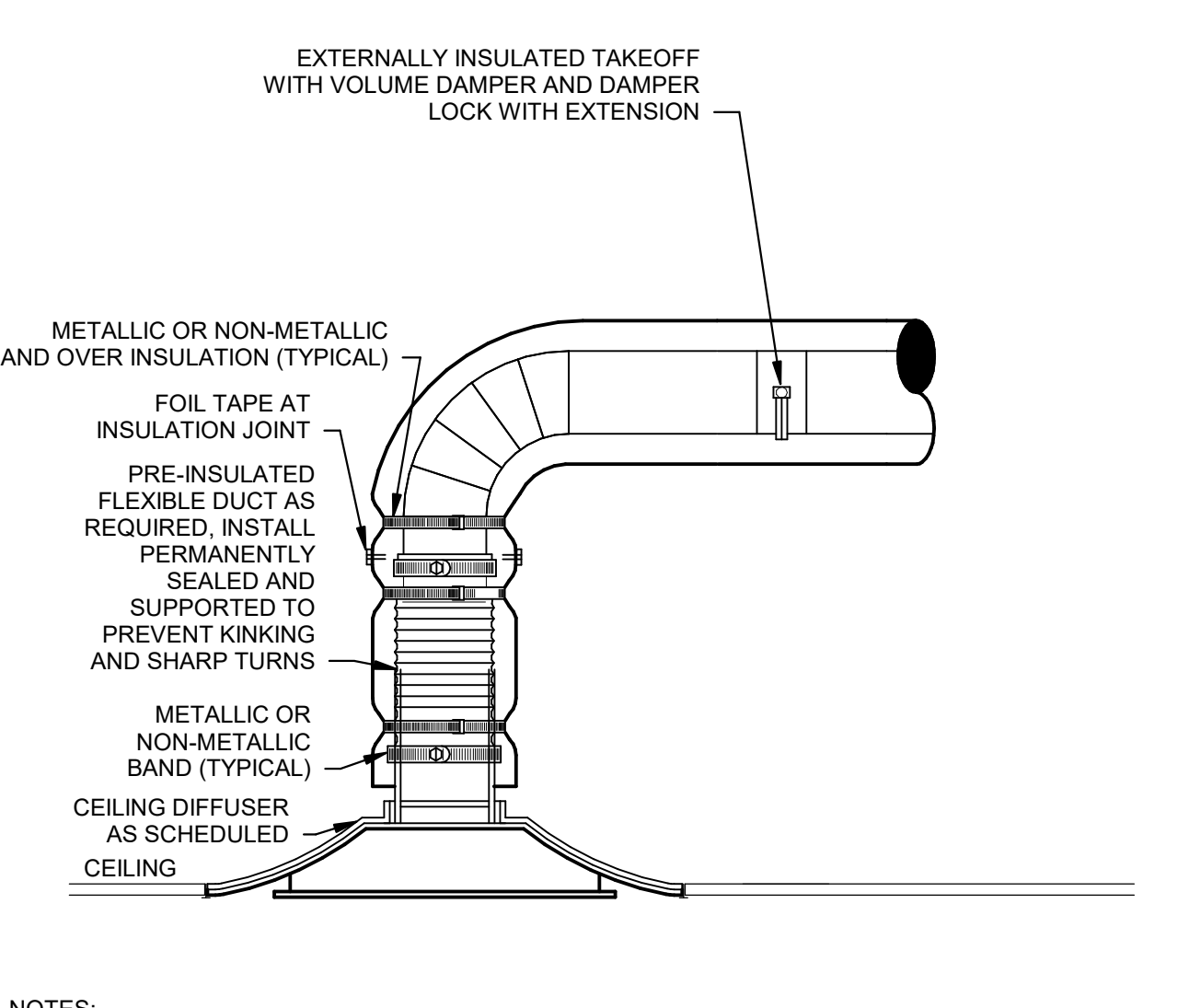
7 GREASE DUCT FIRE WRAP INSULATION INSTALLATION DETAIL NTS



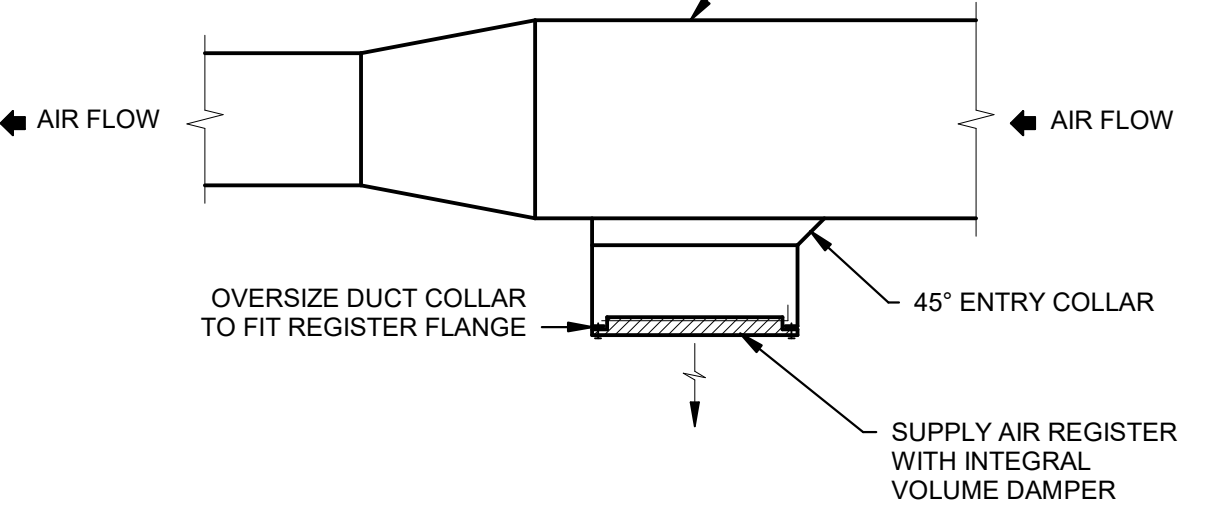
8 GREASE DUCT CLEANOUT ACCESS DOOR DETAIL NTS



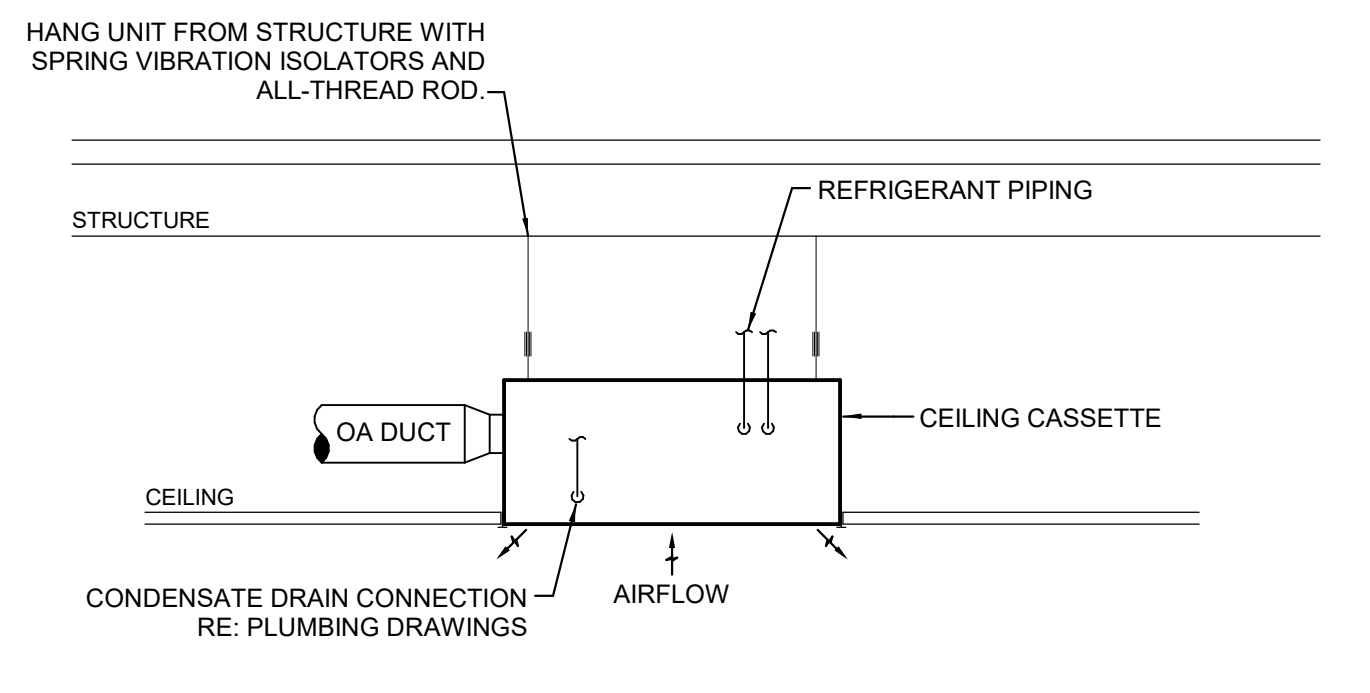
2 HARD CEILING DIFFUSER DETAIL NTS



1 LAY-IN CEILING DIFFUSER DETAIL NTS



3 DUCT MOUNTED REGISTER DETAIL NTS



4 CEILING CASSETTE DETAIL NTS

STORE NO:  
**1366**



| REVISION |                 |
|----------|-----------------|
| DATE     | DESCRIPTION     |
| 04/08/21 | CITY COMMENTS   |
| 05/03/21 | OWNER REVISIONS |

STATUS:  
**PERMIT / BID SET**



05/03/2021

**FIELD VERIFICATION:**  
The contractor shall verify all signed dimensions and conditions of the project site and notify Zebra Architecture, PLLC of any dimensional errors, or omissions or discrepancies before beginning or finishing any work. Do not proceed otherwise.

**COPYRIGHT © 2021:**  
Zebra Architecture, PLLC, shall retain all common law, statutory and all other intellectual rights. Neither the documents nor the information herein is to be reproduced, distributed, disclosed or otherwise without the written consent of Zebra Architecture, LLC.

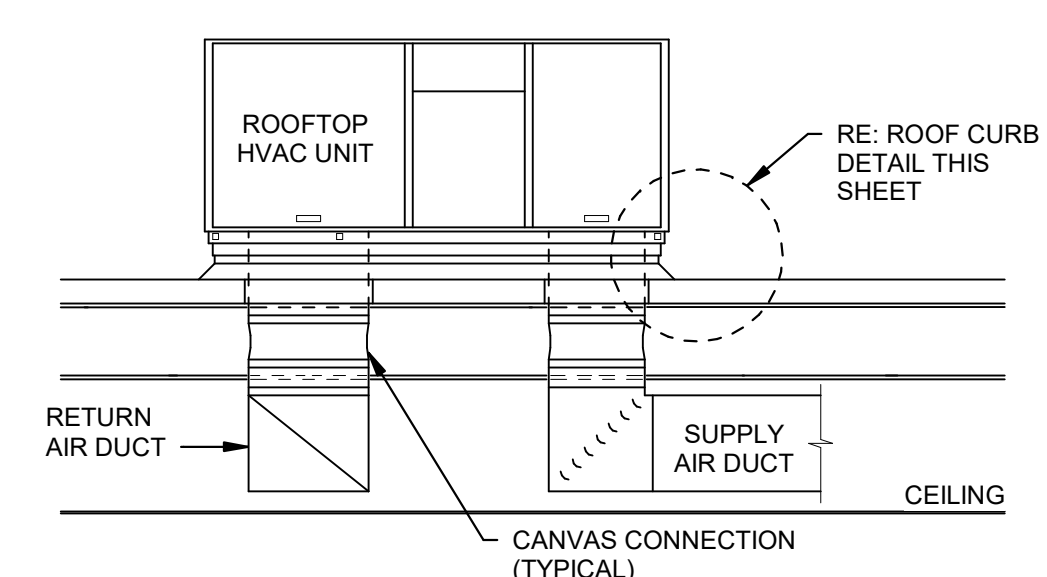
SHEET NAME:  
**MECHANICAL DETAILS**

DATE: 04/08/21 PROJECT NO: 2050004103

DRAWN: AJP SCALE: AS NOTED

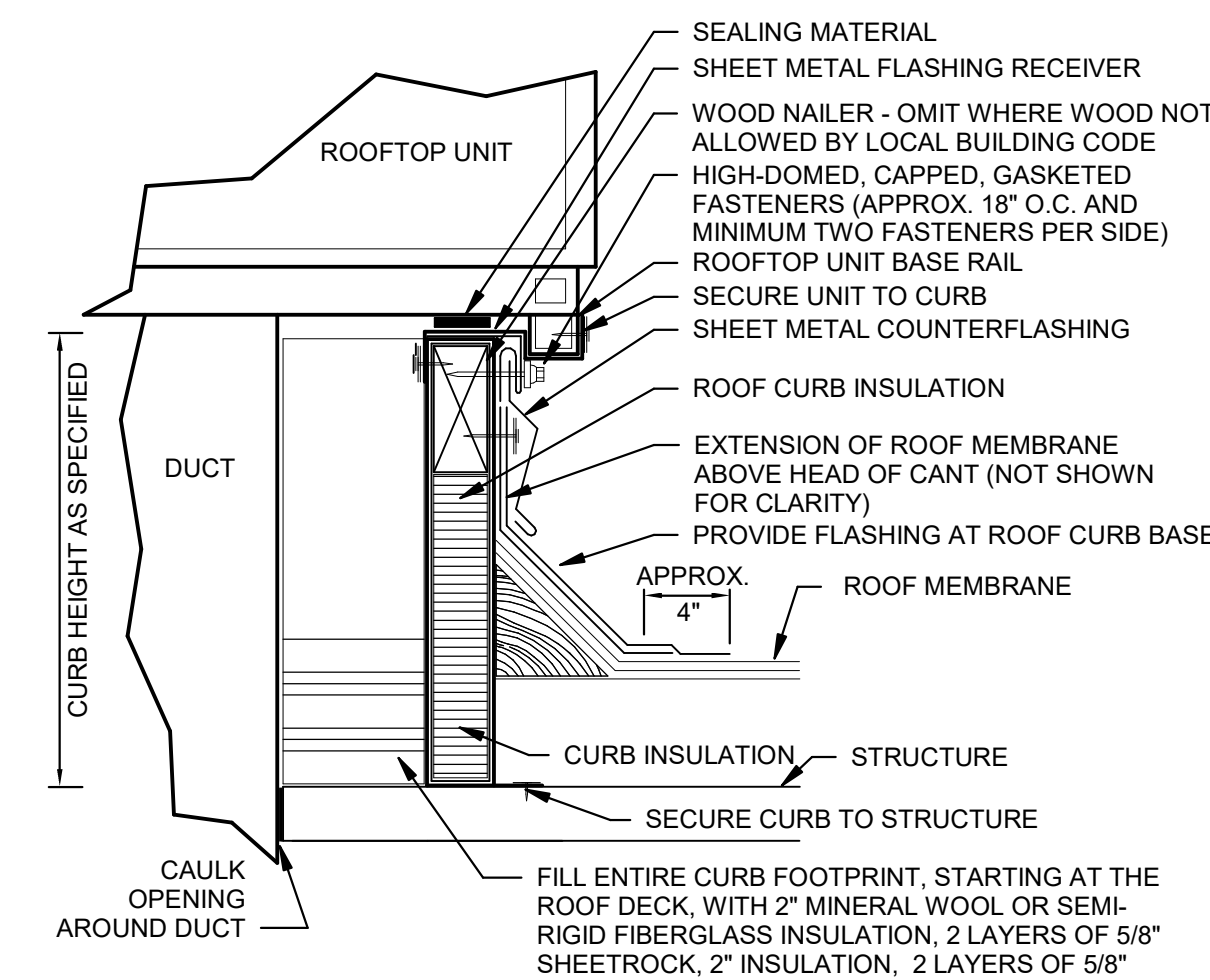
SHEET NO:  
**M502**

PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
PRINT NAME: JUSTIN M. OLDER  
LICENSE #: 52138  
EXPIRATION DATE: 1/8/2022



- NOTES:**
1. PROVIDE OPENING THROUGH ROOF AND ROOF DECK INSULATION NO LARGER THAN REQUIRED TO ALLOW DUCTS TO PASS THROUGH. REFER TO PLANS FOR DUCT SIZES. TRANSITION AS REQUIRED IN ROOF CURB TO RTU SUPPLY AND RETURN OPENINGS.
  2. PROVIDE SLOPED ROOF CURB TO INSTALL ROOFTOP UNIT LEVEL TO ENSURE PROPER DRAINAGE. COORDINATE ROOF SLOPE WITH ARCHITECTURAL FLASH AND COUNTER FLASH ROOF PENETRATIONS, ETC. TO ENSURE WEATHER TIGHT INSTALLATION.

**2 ROOFTOP UNIT WITH DUCTWORK DETAIL NTS**



- NOTES:**
1. CUT METAL DECKING TO ALLOW CURB INSTALLATION ON STEEL FRAMING. AFTER CURB IS SET IN PLACE, TRIM REMAINING METAL DECKING AND INSTALL WITHIN CURB. TACK WELD DECKING TO SUPPORT STEEL. DO NOT WELD INTERIOR DECKING TO ROOF CURB. PROVIDE ADDITIONAL CROSS FRAMING TO SUPPORT INTERIOR DECKING AND FILL MATERIAL AS REQUIRED.
  2. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR ROOF CURBS, ANCHORING AND SEISMIC/WIND RESISTANCE.

**1 ROOF CURB DETAIL NTS**



Division 23. TABLE OF CONTENTS

GENERAL MECHANICAL REQUIREMENTS

1. GENERAL INSTRUCTIONS

- A. GENERAL REQUIREMENTS
B. DEFINITIONS
C. PRE-BID SITE VISIT
D. MATERIAL AND WORKMANSHIP
E. MANUFACTURERS
F. COORDINATION
G. ORDINANCES AND CODES
H. PROTECTION OF EQUIPMENT AND MATERIALS
I. SUBSTITUTIONS
J. SUBMITTALS
K. ELECTRONIC DRAWINGS FILES
L. RECORD DRAWINGS (AS-BUILT DRAWINGS)
M. OPERATION AND MAINTENANCE INSTRUCTIONS
N. SPARE PARTS
O. TRAINING
P. WARRANTIES

2. GENERAL MATERIALS AND INSTALLATION

- A. BUILDING OPERATION
B. EXISTING EQUIPMENT REUSE AND REMOVAL
C. EXCAVATION AND BACKFILLING
D. COINCIDENTAL DAMAGE
E. CUTTING AND PATCHING
F. ROUGH-IN
G. STRUCTURAL SUPPORT SYSTEMS
H. PRE-ENGINEERED ROOF EQUIPMENT SUPPORTS AND CURBS
I. ACCESS PANELS AND DOORS
J. PENETRATIONS
K. FIRESTOPPING
L. MOTORS AND STARTERS
M. VARIABLE FREQUENCY DRIVES
N. ELECTRICAL WIRING
O. EQUIPMENT FURNISHED BY OTHERS
P. SYSTEM TESTING, ADJUSTING, AND BALANCING
Q. VIBRATION ISOLATION
R. SEISMIC CONTROLS FOR MEPP SYSTEMS
S. AIR FILTERS
T. REFRIGERANT AND OIL
U. IDENTIFICATION

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

- A. DUCT INSULATION
B. DUCTWORK
C. FLEXIBLE DUCT
D. PLASTIC FLUE GAS VENTS
E. AIR DEVICES
F. CONTROL DAMPERS
G. EXHAUST AIR SYSTEMS
H. KITCHEN EXHAUST AIR SYSTEMS

4. HVAC EQUIPMENT

- A. CONDENSING UNITS (1.5-6 TONS)
B. FAN COIL UNITS (DIRECT EXPANSION, 1.5-5 TONS)
C. SPLIT DUCTLESS AIR-CONDITIONING SYSTEMS
D. NATURAL GAS RADIANT HEATERS

5. PIPING AND PIPING SPECIALTIES

- A. REFRIGERANT PIPING AND INSTALLATION
B. SYSTEM EVACUATION AND CHARGING

6. TEMPERATURE CONTROLS

- A. GENERAL REQUIREMENTS
B. WIRING
C. THERMOSTAT CONTROL EQUIPMENT
D. SENSORS AND RELAYS

7. SEQUENCE OF OPERATION

- A. FAN COIL UNIT CONTROL
B. KITCHEN EXHAUST FAN CONTROL
C. MAKE-UP AIR UNIT CONTROL
D. RESTROOM EXHAUST FAN (EF-1) CONTROL
E. OUTSIDE AIR FAN (OAF-1) CONTROL

8. ALTERNATIVES

- A. DESCRIPTION

9. COMMISSIONING OF MECHANICAL SYSTEM

- A. GENERAL
B. EXECUTION

Division 23. HEATING, VENTILATING, AND AIR CONDITIONING

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. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes material, equipment, installation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as 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 relationships, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit the space and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

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 are referred to as the CSI Masterformat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

- 1. Division 21 - Fire Suppression Division 15
2. Division 22 - Plumbing Division 15
3. Division 23 - HVAC Division 15
4. Division 24 - Electrical Division 16
5. Division 27 - Communications Division 16
6. Division 28 - Electronic Safety and Security Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations."

Install: "to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install."

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 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.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the work.

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 over 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.

- 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

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

C. PREBID SITE VISIT

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.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Install material and equipment in accordance with the manufacturer's installation instructions. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required item. Written descriptions of the item govern model numbers.

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.

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

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.

F. COORDINATION

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 item.

G. ORDINANCES AND CODES

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.

H. PROTECTION OF EQUIPMENT AND MATERIALS

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. Restore 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.

I. SUBSTITUTIONS

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 otherwise indicated 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 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 of receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions 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 the contract documents and the design concept. Prior to submitting 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 tollfree mailing to the Architect, plus a duplication of this time for resubmission, if required. Only submittals received by the Contractor, Contractor shall submit the submittals shall contain the project name, applicable specification section, submittal date, equipment identification acronym as used on the drawings, and the submitter's stamp. The submitter 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, dimensions, 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 applicable 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 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.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project, including 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 the equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen 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 related to startup 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 will not require approval of building 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. Match existing materials and construction techniques when modifying existing systems unless specified otherwise. Coordinate additional requirements with General Contractor and Architect.

Seal airtight 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 rebalance existing ductwork, diffusers, registers, and grilles intended for reuse as required or as indicated on drawings.

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

C. 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.

D. 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. For post-tension slabs, x-ray slab 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.

E. ROUGH-IN

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

F. 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.

G. PRE-ENGINEERED ROOF EQUIPMENT SUPPORTS AND CURBS

Provide prefabricated equipment support rails and roof curbs manufactured by AES Industries, Custom Curb, Inc., Pate Company, Thybar or approved equal. Provide with fully milled raised cant step and match roof insulation thickness, welded, minimum 1/8 gauge galvanized steel rail, internally reinforced to load bearing factors of equipment being supported, minimum 1-1/2 inch long, 3 pound rigid insulation internally to shell to maintain continuous roof insulation where required, factory installed wood nailer, and minimum 1/8 gauge jacket with counterflashing where equipment does not fully cover the equipment support. Provide sloped roof equipment supports to enable level installation. Provide rigid backing material behind cant to maintain cant slope. Provide multi support rails to fully support the equipment. Attach to roof structure according to manufacturer's installation instructions.

Attach equipment directly to pre-engineered roof equipment support using one of the following methods:

- 1. Rail Equipment Supports: Secure each equipment support rail to the rail with a minimum of 4 points of connection per leg.
2. Roof Curbs: Secure each corner of the equipment to the curb nailer using a minimum of 4 lag screws, located along the length of the equipment. Alternatively, secure equipment to the curb using hold-down brackets. Provide minimum 6 inch long, 1/4 gauge galvanized steel brackets sized to wrap around top of curb and under equipment base rail with sufficient horizontal offset to cover overlap gap between the equipment rail and curb. Secure bracket to equipment and curb nailer using a minimum of 8 points of connection per bracket. Provide one bracket at each corner along the length of the unit.
3. Hold-down Brackets: Coordinate with the curb manufacturer to determine the quantity and size of hold-down brackets and fasteners, with installation instructions for each unit to meet a Building Design Risk Category of I and a Design Wind Speed of 115 mph.
4. Submit signed and sealed drawings that indicate the design and installation requirements of pre-engineered roof supports can withstand the design criteria listed. Include installation requirements for anchoring to the roof structure. The Engineer is not responsible and will not provide the seal and signature. Deliver submittals to the local AHJ for approval prior to installation of the contractor provided, pre-engineered roof supports.
5. Provide seismic restraints in accordance with Article "Seismic Controls for MEPP Systems."

H. 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 lay-in ceilings. 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, concealed hinges, flush screwdriver-operated cam lock, and anchor straps. Provide access doors manufactured by Greenheck, Milor, Tirus, Zum, or equal.

I. 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 steel 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 watertight 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 sleeves 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 penetrations elevated the slabs or the roof to the exterior. Provide cover over curb of weather-resistant material and seal duct or pipe penetrations 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 Zum. Provide modular mechanical sleeve seals, manufactured by Catpico, Metasteel, or Thundefine / Link Seal.

Seal elevated concrete slab with wall pipe membrane penetrations with "wall pipes" and water proof sealant. Seal waterstop ring 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 Zum.

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.

J. 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: Hilti, HectorSeal, 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 illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protector engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Include qualifications data for testing agency.

K. 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 starting torque 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 SCR Bearing Protection Ring, InproSeal Current Diverted Ring (CDR) 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 enclosures for motors exposed to weather. Motors shall be manufactured by Century, General Electric, Louis Allis, Westinghouse, or approved equal.

Provide every motor, except fractional horsepower single phase motors with an approved type of "built-in" thermal overload protection, with a motor starter. Each starter shall be provided with overload heaters sized to the motor rating, and every three phase motor starter shall have overload heaters in each phase. Ambient compensated heaters shall be installed wherever necessary. Unless noted otherwise, motor starters shall be provided by the Division 23 Contractor for installation and connection by the Division 26 Contractor. Starters shall be Allen-Bradley, Clark, Furness, Square D





COMcheck Software Version 4.1.5.1  
**Mechanical Compliance Certificate**

**Project Information**

Energy Code: 2018 IECC  
 Project Title: Shake Shack  
 Location: Gaithersburg, Maryland  
 Climate Zone: 4a  
 Project Type: New Construction

Construction Site: Gaithersburg, MD  
 Owner/Agent: Shake Shack  
 Designer/Contractor: Henderson Engineers Inc. Lenexa, KS

**Additional Efficiency Package(s)**  
 Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

**Mechanical Systems List**

| Quantity | System Type & Description   |
|----------|---|
| 1        | RTU-1 (Single Zone)<br>Heating: 1 each - Other, Gas, Capacity = 178 kBtu/h<br>No minimum efficiency requirement applies<br>Cooling: 1 each - Single Package DX Unit, Capacity = 177 kBtu/h, Air-Cooled Condenser, Air Economizer<br>Proposed Efficiency = 14.00 EER, Required Efficiency: 10.80 EER + 12.2 IEER<br>Fan System: FAN SYSTEM 1 - Compliance (Motor nameplate HP method) : Passes<br>Fans:<br>FAN 1 Supply, Constant Volume, 4800 CFM, 3.0 motor nameplate hp, 0.0 fan efficiency grade |
| 1        | RTU-2 (Single Zone)<br>Heating: 1 each - Other, Gas, Capacity = 178 kBtu/h<br>No minimum efficiency requirement applies<br>Cooling: 1 each - Single Package DX Unit, Capacity = 170 kBtu/h, Air-Cooled Condenser, Air Economizer<br>Proposed Efficiency = 14.00 EER, Required Efficiency: 10.80 EER + 12.2 IEER<br>Fan System: FAN SYSTEM 2 - Compliance (Motor nameplate HP method) : Passes<br>Fans:<br>FAN 2 Supply, Constant Volume, 4800 CFM, 3.0 motor nameplate hp, 0.0 fan efficiency grade |
| 1        | FCU-1/UCU-1 (Single Zone)<br>Cooling: 1 each - Split System, Capacity = 11 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None<br>Proposed Efficiency = 19.00 SEER, Required Efficiency: 13.00 SEER<br>Fan System: FAN SYSTEM 3 - Compliance (Motor nameplate HP method) : Passes<br>Fans:<br>FAN 3 Supply, Constant Volume, 420 CFM, 0.1 motor nameplate hp, 0.0 fan efficiency grade  |
| 2        | Water Heater 1:<br>Gas Instantaneous Water Heater, Capacity: 0 gallons, Input Rating: 199 kBtu/h w/ Circulation Pump<br>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 2018 IECC requirements in COMcheck version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the inspection Checklist.

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 1 of 15  
 MD\000\Energy\ComCheck.cck

Andrew Pettus - Mechanical Designer  
 Name - Title

Signature

2/23/2021  
 Date

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 2 of 15  
 MD\000\Energy\ComCheck.cck

| Section # & Req.ID        | Plumbing Rough-In Inspection  | Complies?  | Comments/Assumptions     |
|---------------------------|---|--|--------------------------|
| C404.7 [PL8] <sup>1</sup> | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.7 [PL8] <sup>1</sup> | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |

**Additional Comments/Assumptions:**

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 6 of 15  
 MD\000\Energy\ComCheck.cck

COMcheck Software Version 4.1.5.1  
**Inspection Checklist**  
 Energy Code: 2018 IECC

Requirements: 74.0% 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] <sup>1</sup> | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks. | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C103.2 [PR3] <sup>1</sup> | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C406 [PR9] <sup>1</sup>   | Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable |                          |

**Additional Comments/Assumptions:**

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 3 of 15  
 MD\000\Energy\ComCheck.cck

| Section # & Req.ID            | Mechanical Rough-In Inspection  | Complies?  | Comments/Assumptions                        |
|-------------------------------|---|--|---|
| C402.2.6 [ME11] <sup>1</sup>  | Thermally ineffective panel surfaces of heating radiant panels have insulation = R-3.5.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.11.3 [ME6] <sup>1</sup>  | HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.  | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.8.4 [ME142] <sup>1</sup> | Motors for fans that are not less than 1/2 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.                | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.8.4 [ME142] <sup>1</sup> | Motors for fans that are not less than 1/2 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.                | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.8.4 [ME142] <sup>1</sup> | Motors for fans that are not less than 1/2 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.                | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.8.5 [ME143] <sup>1</sup> | Each DX cooling system > 65 kbtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section. | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.8.5 [ME143] <sup>1</sup> | Each DX cooling system > 65 kbtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section. | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.8.5 [ME143] <sup>1</sup> | Each DX cooling system > 65 kbtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section. | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.12.1 [ME71] <sup>1</sup> | Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |
| C403.2.3 [ME55] <sup>1</sup>  | HVAC equipment efficiency verified.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | See the Mechanical Systems list for values. |
| C403.5.5 [ME113] <sup>1</sup> | Fault detection and diagnostics installed with air-cooled unitary DX units having economizers.  | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met.                    |

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 7 of 15  
 MD\000\Energy\ComCheck.cck

| Section # & Req.ID           | Footings / Foundation Inspection   | Complies?  | Comments/Assumptions     |
|------------------------------|--|--|--------------------------|
| C403.12.2 [FO9] <sup>1</sup> | Snowmelt melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. Future connection to controls. | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |

**Additional Comments/Assumptions:**

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 4 of 15  
 MD\000\Energy\ComCheck.cck

| Section # & Req.ID            | Mechanical Rough-In Inspection   | Complies?  | Comments/Assumptions     |
|-------------------------------|--|--|--------------------------|
| C403.5.5 [ME113] <sup>1</sup> | Fault detection and diagnostics installed with air-cooled unitary DX units having economizers.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.2.2 [ME99] <sup>1</sup>  | Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.7.1 [ME149] <sup>1</sup> | Demand control ventilation provided for spaces >100 ft <sup>2</sup> and >25 people/1000 ft <sup>2</sup> occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >= 3,000 cfm. | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.7.2 [ME115] <sup>1</sup> | Enclosed parking garage ventilation has automatic contaminant detection and capacity to stack or modulate fans to 50% or less of design capacity.  | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.7.6 [ME141] <sup>1</sup> | HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms. Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).                       | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.7.4 [ME57] <sup>1</sup>  | Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).  | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.7.5 [ME116] <sup>1</sup> | Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and safety hood rating requirements and maximum exhaust rate criteria.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.11.1 [ME60] <sup>1</sup> | HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.5.1 [ME62] <sup>1</sup>  | Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.    | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C403.5.2 [ME62] <sup>1</sup>  | Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.    | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 8 of 15  
 MD\000\Energy\ComCheck.cck

| Section # & Req.ID          | Plumbing Rough-In Inspection  | Complies?  | Comments/Assumptions     |
|-----------------------------|---|--|--------------------------|
| C404.5.1 [PL6] <sup>1</sup> | Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.5.1 [PL6] <sup>1</sup> | Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.5.1 [PL6] <sup>1</sup> | Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.5.1 [PL6] <sup>1</sup> | Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.6.1 [PL3] <sup>1</sup> | Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.   | <input type="checkbox"/> Complies<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.6.3 [PL7] <sup>1</sup> | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.6.3 [PL7] <sup>1</sup> | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.6.3 [PL7] <sup>1</sup> | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.7 [PL8] <sup>1</sup>   | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |
| C404.7 [PL8] <sup>1</sup>   | 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<br><input type="checkbox"/> Does Not<br><input type="checkbox"/> Not Observable<br><input type="checkbox"/> Not Applicable | Requirement will be met. |

Project Title: Shake Shack Report date: 02/23/21  
 Data filename: J:\Lenexa\Programs\P-T\Shake Shack\2050004103 Shake Shack 1366 - (Kentlands) Gaithersburg Page 5 of 15  
 MD\000\Energy\ComCheck.cck



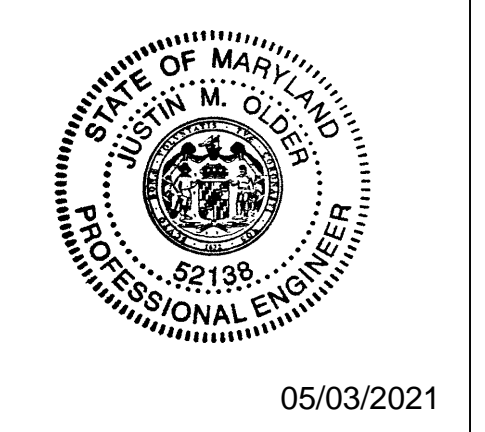
**ENGINEER OF RECORD:**  
**JUSTIN M. OLDER**  
 8345 LENEXA DRIVE, SUITE 300  
 LENEXA, KS 66214  
 TEL 913.742.5000 FAX 913.742.5001  
 20210410  
 MD CORPORATE NUMBER: 07-6699 EXPRESS 10/1/2021

STORE NO: 1366



| REVISION |                 |
|----------|-----------------|
| DATE     | DESCRIPTION     |
| 04/08/21 | CITY COMMENTS   |
| 05/03/21 | OWNER REVISIONS |

STATUS: PERMIT / BID SET



05/03/2021

FIELD VERIFICATION: The contractor shall verify all signed dimensions and location at the project site and notify Zebra Architecture, LLC of any dimensional errors, or omissions or omissions of dimensions before beginning or resuming any work. Do not proceed until approved.

COPYRIGHT © 2021: Zebra Architecture, LLC. shall retain all common law, statutory and all other intellectual property rights. No other documents or the inspection herein is to be reproduced, distributed, disclosed or otherwise without the written consent of Zebra Architecture, LLC.

SHEET NAME: MECHANICAL ENERGY CODE COMPLIANCE

DATE: 04/08/21 PROJECT NO: 2050004103  
 DRAWN: AJP SCALE: AS NOTED

SHEET NO: 630

PROFESSIONAL CERTIFICATION  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 PRINT NAME: JUSTIN M. OLDER  
 LICENSE #: 62138  
 EXPIRATION DATE: 1/8/2022

E  
D  
C  
B  
A

JUSTIN M. OLDER



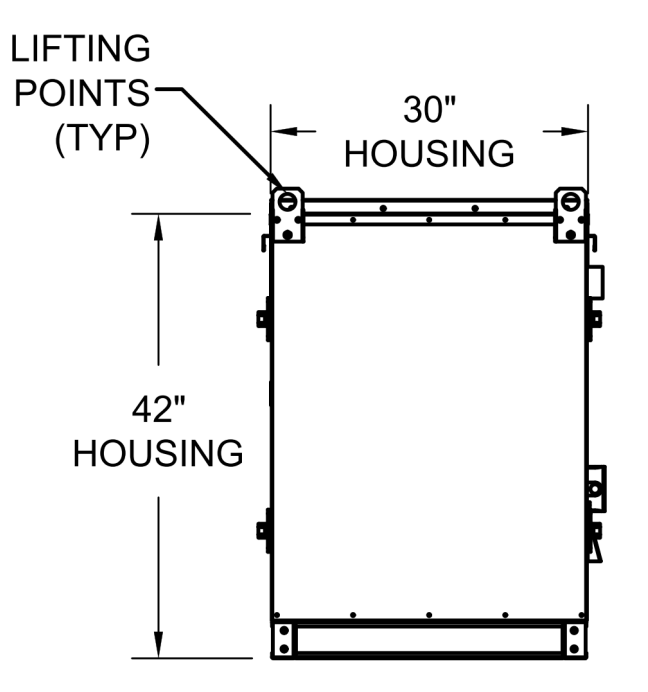
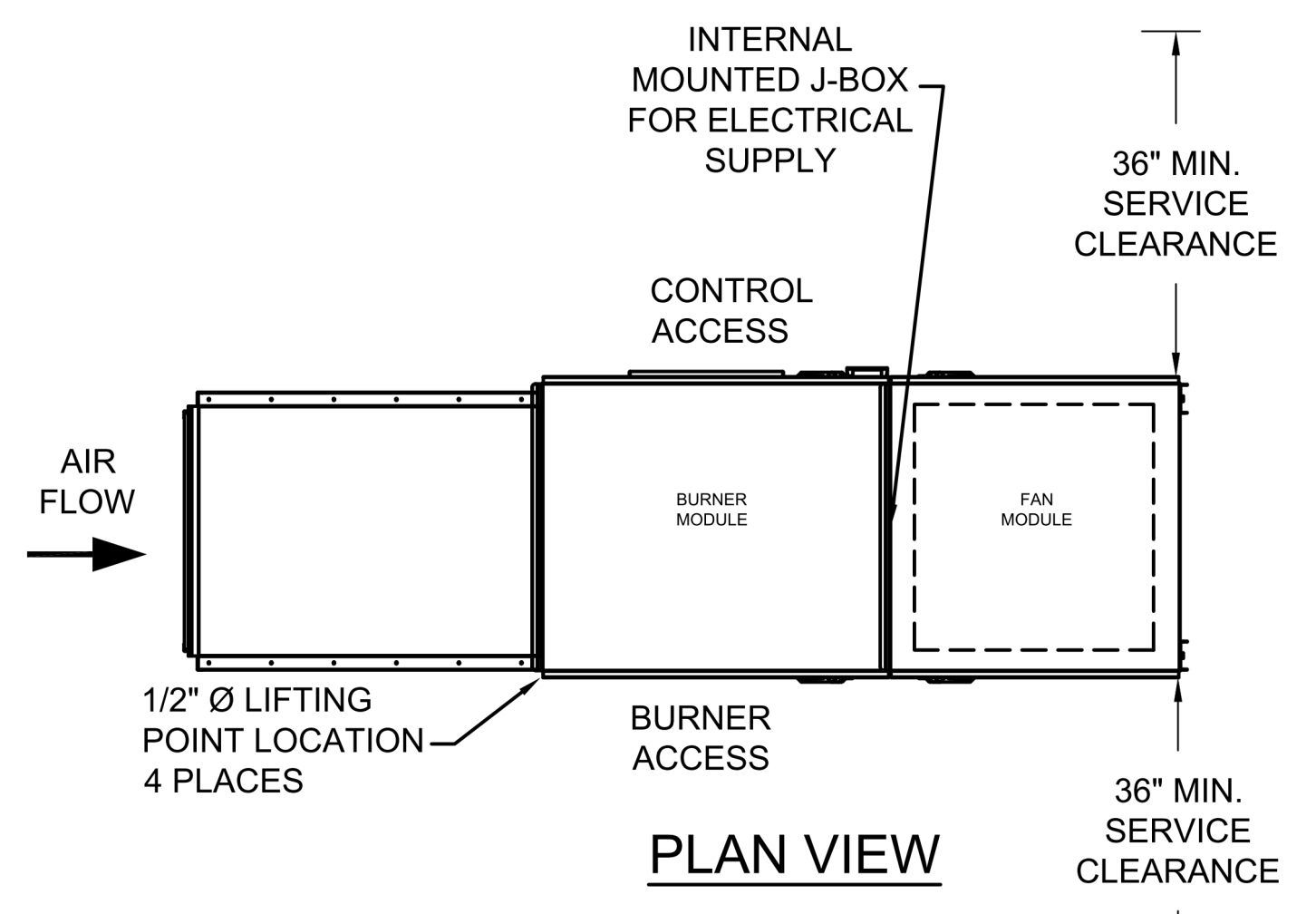
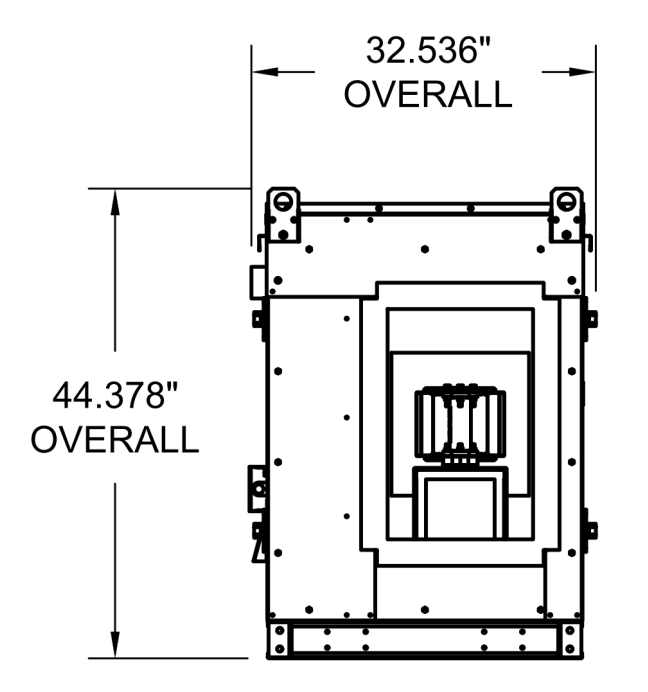
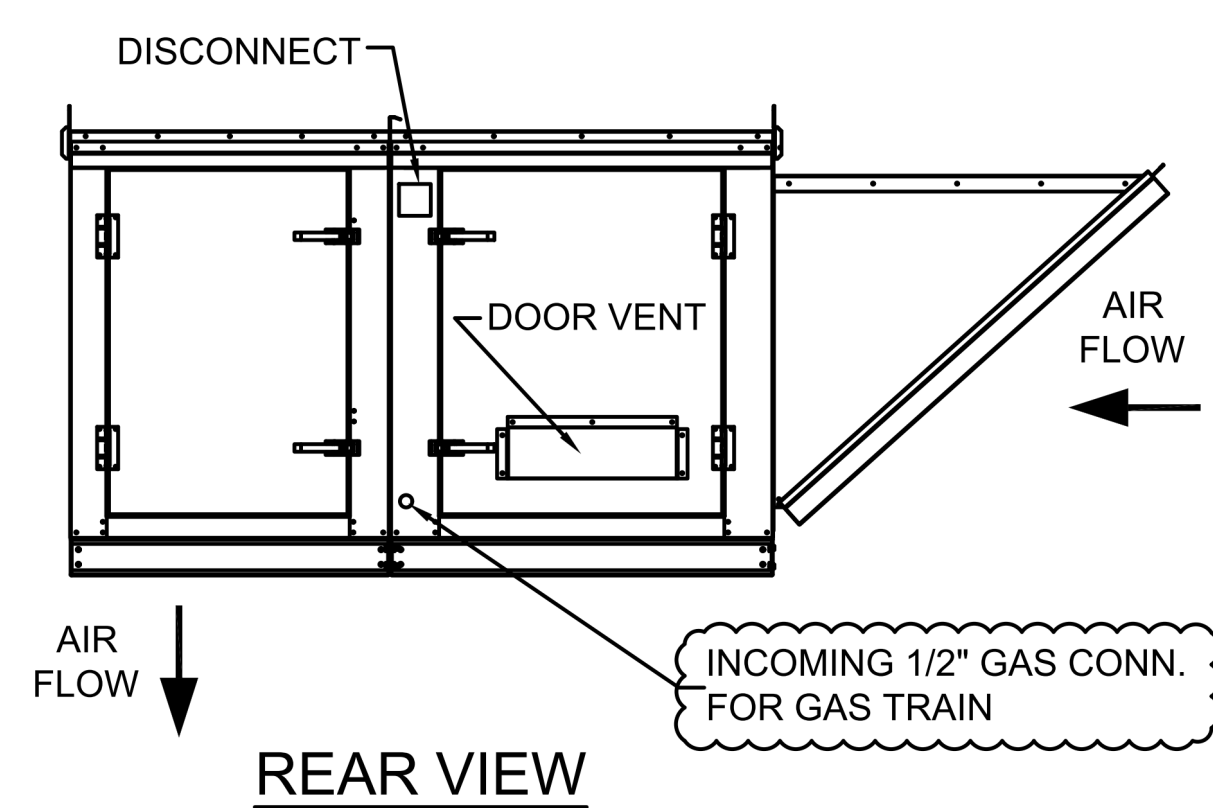




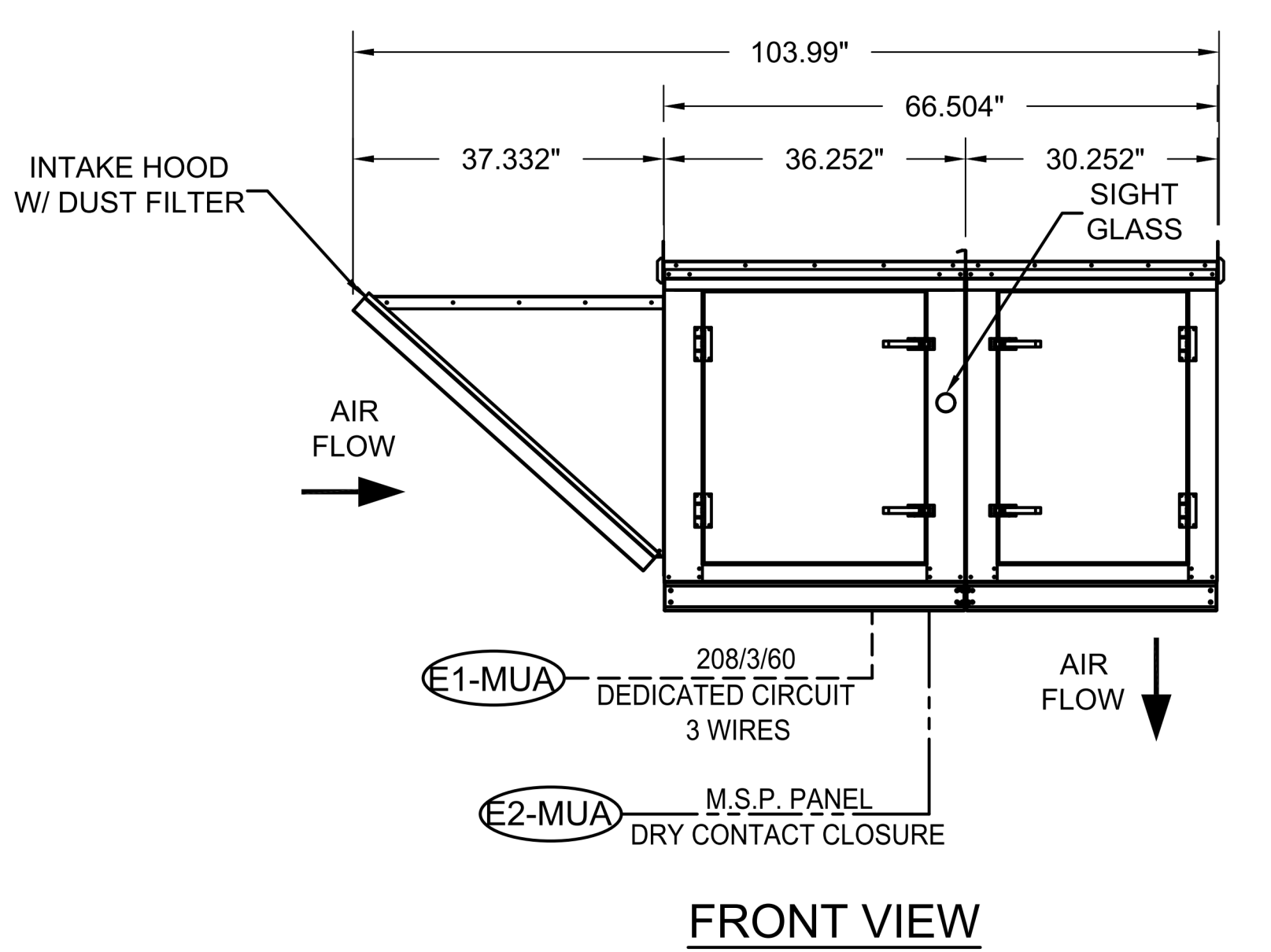
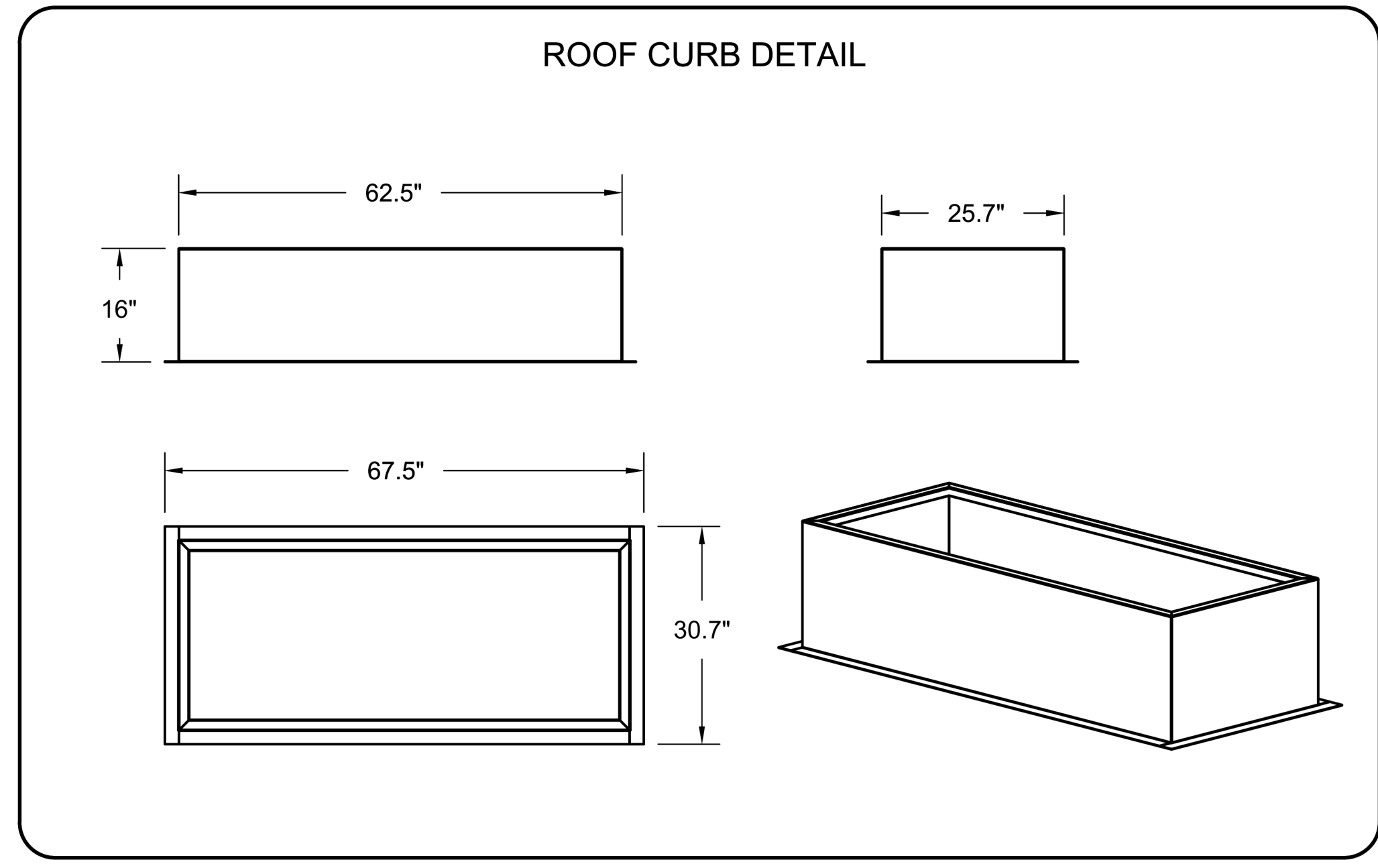
| MUA CHART             |                 |        |
|-----------------------|-----------------|--------|
| DATA                  | IMPERIAL        | METRIC |
| Model                 | MUA-DG-2800     |        |
| Max. Supply Air       | 2800 CFM        | - l/s  |
| Design Supply Air     | 2250 CFM        | - l/s  |
| Internal S.P.         | 1.14" W.G.      | - PA   |
| External S.P.         | 0.5" W.G.       | - PA   |
| Total S.P.            | 1.64" W.G.      |        |
| Motor                 | 1.5 hp          |        |
| Power                 | 0.89 bhp        |        |
| Full Load AMPS        | 6.6             |        |
| Motor RPM             | 1800            |        |
| Voltage/Phase/Hz      | 208/3/60        |        |
| Fan RPM               | 1745            |        |
| Mounting              | Exterior/Floor  |        |
| Blower Model          | ANPA 14         |        |
| Gas Type              | Natural         |        |
| Min. Gas Pressure     | 8" W.C.         |        |
| Max. Gas Pressure     | 14" W.C.        |        |
| Gas Line Size         | 1/2"            |        |
| Discharge Temperature | 70°             |        |
| Temperature Rise      | 57.8°           |        |
| Input MBH             | 153             |        |
| Output MBH            | 141             |        |
| Material Type         | G90 Galv. 20GA. |        |
| Paint Color           | Unpainted       |        |
| Weight                | 804 lbs         | - kg   |

| STANDARD FEATURES        |   |
|--------------------------|---|
| <input type="checkbox"/> | Belt Drive Fan (Comefri ATLI)                     |
| <input type="checkbox"/> | 1" Duct Board Insulation Double Wall              |
| <input type="checkbox"/> | Constant Volume                                   |
| <input type="checkbox"/> | Unit Mounted Controls                             |
| <input type="checkbox"/> | Neoprene Fan Isolators                            |
| <input type="checkbox"/> | End Discharge                                     |
| <input type="checkbox"/> | Gravity Intake Damper                             |
| <input type="checkbox"/> | Direct Spark Gas Train                            |
| OPTIONS                  |   |
| <input type="checkbox"/> | Direct Drive Plenum Fan (Comefri ANPA)            |
| <input type="checkbox"/> | No Insulation                                     |
| <input type="checkbox"/> | Variable Speed (Powerflex 523 VFD)                |
| <input type="checkbox"/> | Motorized Intake Damper                           |
| <input type="checkbox"/> | Intake Hood w/ 2" Alum. Mesh Filters & Birdscreen |
| <input type="checkbox"/> | MERV 8 Filtered Intake (Dust Filter)              |
| <input type="checkbox"/> | Remote DAT (Discharge Air Temperature) Controls   |
| <input type="checkbox"/> | Space Temp Control                                |
| <input type="checkbox"/> | Non Insulated Roof Curb                           |
| <input type="checkbox"/> | Insulated Roof Curb                               |
| <input type="checkbox"/> | Non Insulated Roof Curb w/ Wood Nailers           |
| <input type="checkbox"/> | Insulated Roof Curb w/ Wood Nailers               |
| <input type="checkbox"/> | Seismic Fan Isolators                             |
| <input type="checkbox"/> | Gas Train Pressure Gauges                         |
| <input type="checkbox"/> | High & Low Gas Pressure Switches                  |
| <input type="checkbox"/> | Freeze Stat                                       |
| <input type="checkbox"/> | Remote Start/Stop Contact                         |
| <input type="checkbox"/> | Remote Call for Heat Contact                      |
| <input type="checkbox"/> | Down Discharge                                    |

ITEM #MUA-01



| ELECTRICAL SCHEDULE |                                       |                 |          |
|---------------------|---------------------------------------|-----------------|----------|
| CONNECTION #        | CONNECTION DESCRIPTION                | FROM            | TO       |
| E1-MUA              | 208/3/60 - FAN MOTOR POWER - 3 WIRES  | BUILDING SOURCE | J-BOX    |
| E2-MUA              | DRY CONTACT CLOSURE FROM M.S.P. PANEL | M.S.P. PANEL    | MUA UNIT |



ELECTRICAL CONNECTION WILL COME UP THROUGH CURB INTO BOTTOM OF UNIT

| SPECIFICATIONS                  |  |
|---------------------------------|--|
| <b>GAS INFORMATION</b>          | MIDCO 6" SS BURNER<br>PRESSURE REGULATOR SUPPLIED<br>RTC GAS CONTROLS<br>DISCHARGE TEMPERATURE DIAL MOUNTED IN UNIT<br>HIGH TEMP LIMIT SWITCH SET TO 140°F   |
| <b>ELECTRICAL INFORMATION</b>   | 230V/3PH/60HZ SUPPLY<br>INTEGRAL NON-FUSED DISCONNECT SWITCH<br>PREMIUM EFFICIENCY MOTOR<br>INTEGRAL MOTOR STARTER WITH THERMAL OVERLOADS<br>FIRE PROTECTION INTERLOCK<br>REMOTE START/STOP<br>50% MUA TURN DOWN   |
| <b>EQUIPMENT SPECIFICATIONS</b> | ENTERING AIR THERMOSTAT/LOW TEMPERATURE CUTOUT<br>EXTERNAL PROFILE ADJUSTMENT WITH PRESSURE GAUGE<br>GALVANIZED FINISH<br>0" CLEARANCE ON TOP & BOTTOM OF UNIT<br>UNIT SHIPS ASSEMBLED IN ONE PIECE<br>1" CLEARANCE TO COMBUSTIBLE ON ENDS<br>LISTED 18" FROM COMBUSTIBLE ON SIDES |

THIS DRAWING MUST BE CHECKED, SIGNED AND RETURNED TO THE APPROPRIATE FACTORY. PLEASE VERIFY THE FOLLOWING:

1. ALL DIMENSIONS AND TOLERANCES
2. THE LOCATION AND TYPE OF COOKING EQUIPMENT.

ANY CHANGES TO COOKING EQUIPMENT SUCH AS INCREASED ENERGY INPUTS OR EQUIPMENT CHANGES OCCUR, A RECALCULATION MUST BE PERFORMED AND APPROVED BY THE ENGINEER OF RECORD. REVISE AND RESUBMIT APPROVED FOR FABRICATION WITH NO CHANGES AS NOTED

DATE: 02/28/21

BY: SKM

REVISIONS:

| REV. | DESCRIPTION                                   |
|------|---|
| 1    | REMOVED GRAVITY DAMPER, CHGD ROOF CURB HEIGHT |

MAIL APPROVED DRAWINGS TO APPROPRIATE FACTORY BELOW:

HALTON CO. (CANADA)  
1021 BREW PLACE  
MISSISSAUGA, ON L4W 3R7  
1-905-262-4300

PROJECT: SHAKE SHACK GAITHERSBURG, MD  
LOCATION: GAITHERSBURG, MD  
DRAWN BY: SKM DATE: 02/08/21  
SCALE: NOT TO SCALE  
CONSULTANT:

DRAWING TITLE: MUA-DG 2800  
DRAWING No.: U21-101  
REV. NO.: 1 SHEET NO.: 3 of 4

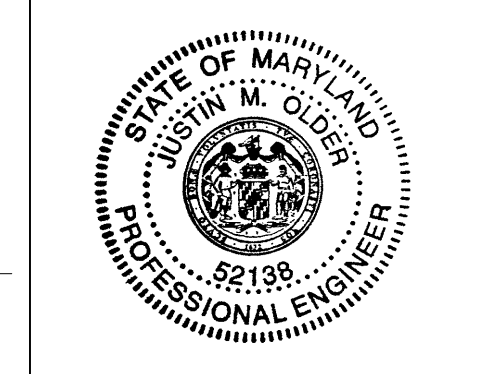
**Halton**

STORE NO: 1366

**SHAKE SHACK**  
KENTLANDS SQUARE  
158 KENTLANDS SQUARE  
GAITHERSBURG, MD 20878

| REVISION |                 |               |
|----------|-----------------|---------------|
| DATE     | DESCRIPTION     | CITY COMMENTS |
| 04/08/21 | CITY COMMENTS   |               |
| 05/03/21 | OWNER REVISIONS |               |

STATUS: PERMIT / BID SET



FIELD VERIFICATION:  
The contractor shall verify all signed dimensions and condition of the project site and notify Zebra Architecture, LLC of any dimensional errors, or omissions or work. Do not commence work until approved or fabricated per work. Do not proceed with work until approved or fabricated per work.

COPYRIGHT © 2021:  
Zebra Architecture, LLC shall retain all common law, statutory and all other intellectual property rights. Neither the documents nor the information herein is to be reproduced, distributed, disclosed or otherwise without the written consent of Zebra Architecture, LLC.

SHEET NAME: HALTON DRAWINGS

|                |                        |
|----------------|------------------------|
| DATE: 04/08/21 | PROJECT NO: 2050004103 |
| DRAWN: AJP     | SCALE: AS NOTED        |

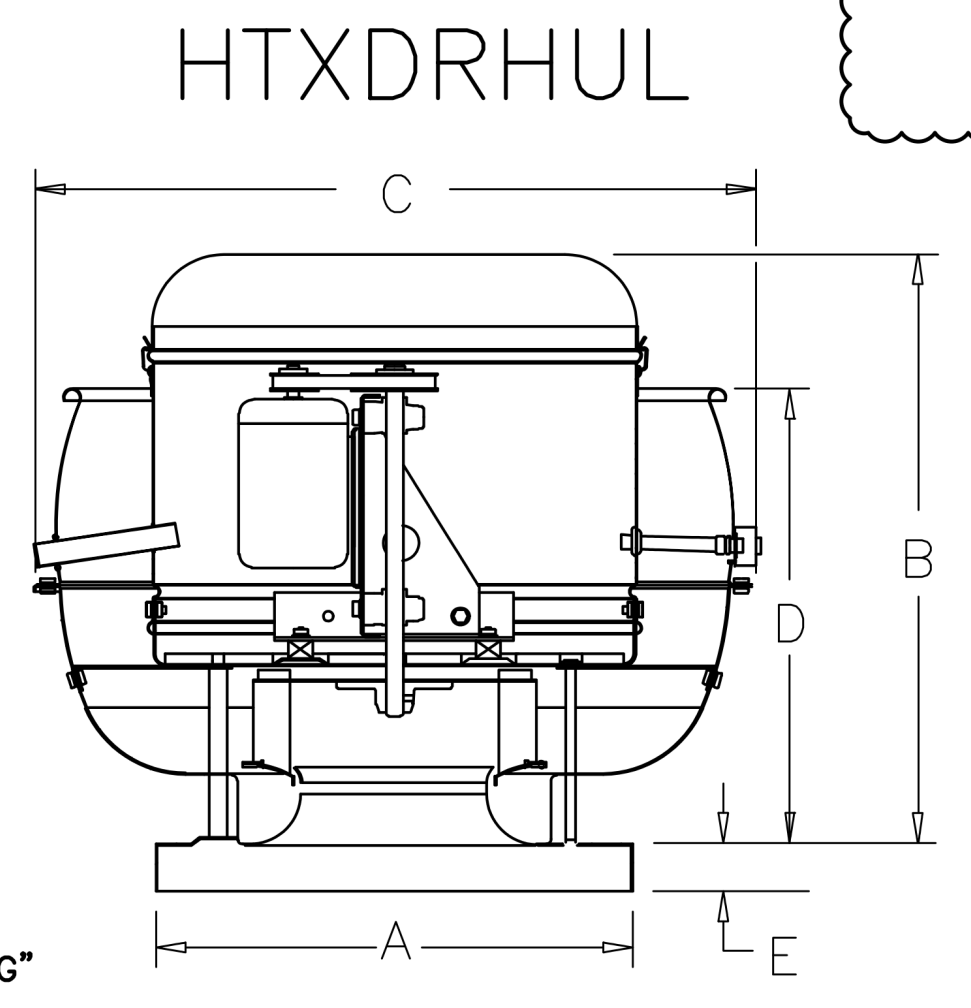
SHEET NO: M703

NOTE:  
THE DOCUMENTATION CONTAINED ON THIS SHEET WAS NOT PREPARED BY HENDERSON ENGINEERS AND IS INCLUDED IN THIS SET FOR REFERENCE ONLY. HENDERSON ENGINEERS REVIEWED THE DOCUMENTATION ON THIS SHEET FOR GENERAL COMPLIANCE WITH DESIGN INTENT. SUPPLIER IS RESPONSIBLE THAT ALL FURNISHED EQUIPMENT ON THIS SHEET COMPLIES WITH APPLICABLE LOCAL, STATE, AND FEDERAL LAWS, CODES, AND REGULATIONS.

### FAN INFORMATION TABLE

| FAN NO | MODEL           | QTY | CFM  | S.P.  | H.P. | VOLTAGE  | AMPS | ACCESSORIES   |
|--------|-----------------|-----|------|-------|------|----------|------|---|
| EF-1   | HSTXDRHUL1475SC | 1   | 875  | 0.75" | 3/4  | 115/1/60 | 13.8 | MOUNT & WIRE DISCONNECT - SPEED CONTROL - 18-1/2" SQ GALV SF CURB, 24" HIGH VENTED - LABEL UL/CUL 762, LISTED RESTAURANT - GREASE CONTAINER - HINGE KIT |
| EF-2   | HSTXDRHUL1475SC | 1   | 1886 | 0.90" | 3/4  | 115/1/60 | 13.8 | MOUNT & WIRE DISCONNECT - SPEED CONTROL - 18-1/2" SQ GALV SF CURB 24" HIGH VENTED - LABEL UL/CUL 762, LISTED RESTAURANT - GREASE CONTAINER - HINGE KIT  |

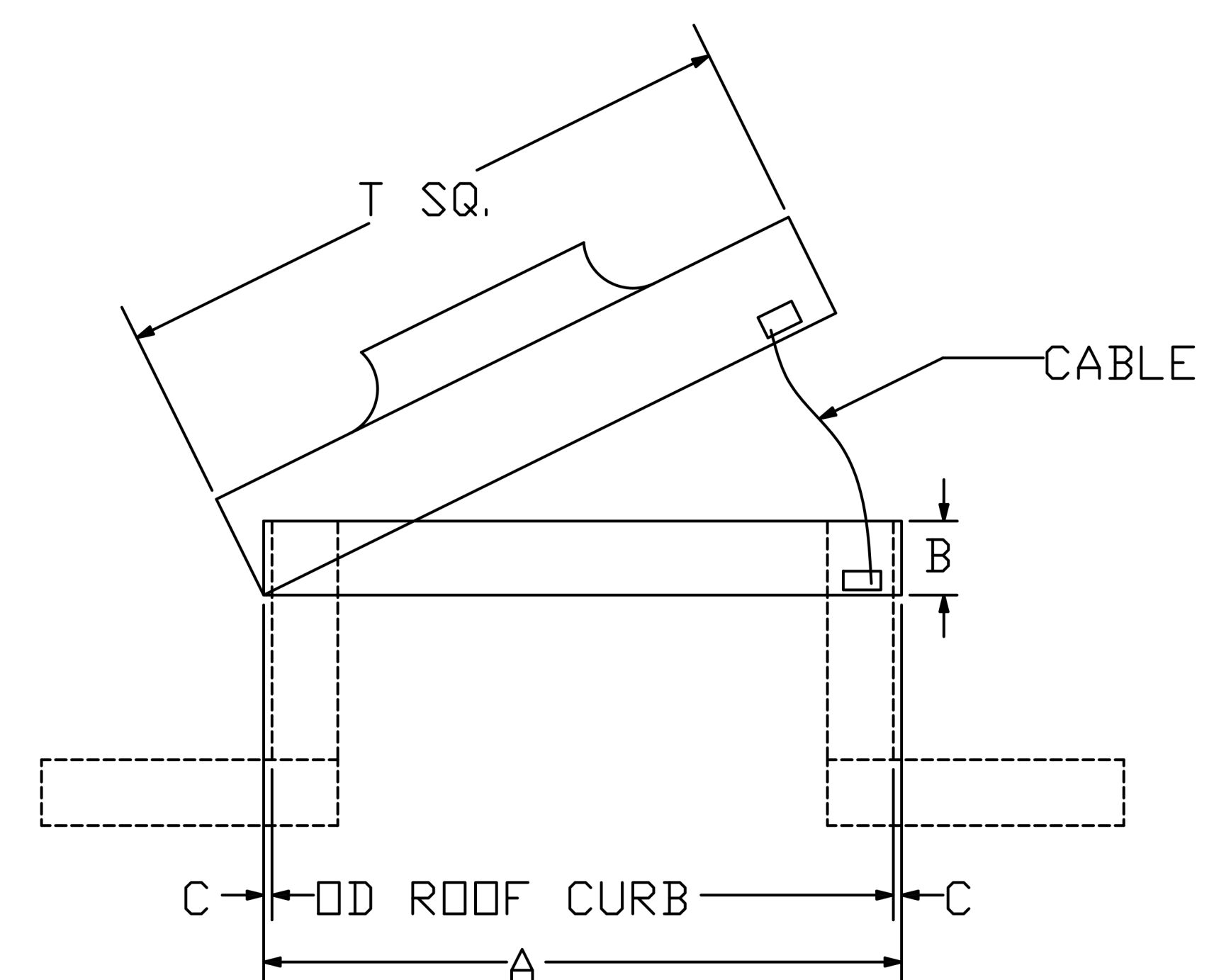
**NOTE:**  
ON ROOF UNITS, ANCHOR THE FAN SECURELY TO THE CURB. ANCHORING THROUGH THE VERTICAL PORTION OF THE CURB CAP FLANGE IS RECOMMENDED. USE A MINIMUM OF FOUR LAG BOLTS OR OTHER SUITABLE FASTENERS.



DAMPER OD = "F"  
ROOF OPENING = "G"  
CURB OD = "H"

| TAG  | SIZE | A   | B      | C      | D      | E  | F   | G     | H     | J      | K      | SHIP'G WT. - LESS MOTOR |
|------|------|-----|--------|--------|--------|----|-----|-------|-------|--------|--------|-------------------------|
| EF-1 | 14   | 20" | 26.94" | 31.31" | 21.94" | 2" | 14" | 15.5" | 18.5" | 15.50" | 19.75" | 118                     |
| EF-2 | 14   | 20" | 26.94" | 31.31" | 21.94" | 2" | 14" | 15.5" | 18.5" | 15.50" | 19.75" | 118                     |

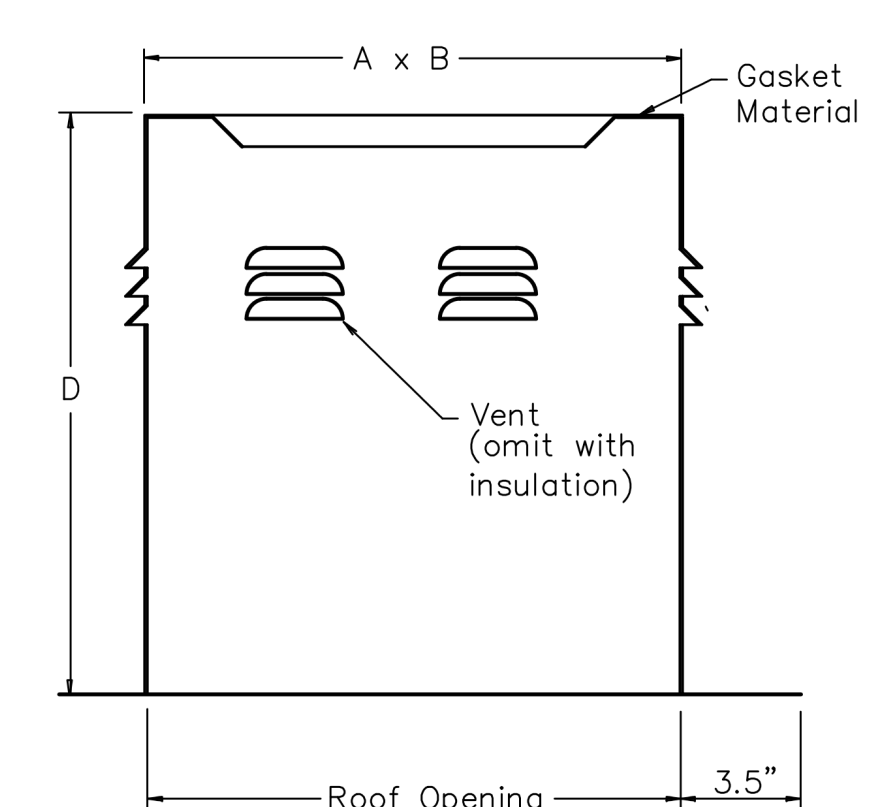
**NOTE:**  
ELECTRICAL CONNECTIONS TO BE MADE ON HINGE SIDE OF FAN.



### CURB

CURB TYPE: GSFRC

- OPTIONS: (as noted below)
- 1) 4 VENTS
  - 2) NO DAMPER SHELF



| TAG  | QTY | DESCRIPTION | MATERIAL GAUGE | A     | B     | C    | D   | ROOF OPENING  | OPTIONS |
|------|-----|-------------|----------------|-------|-------|------|-----|---------------|---------|
| EF-1 | 1   | GSFRC       | 18.5           | 18.5" | 18.5" | 1.5" | 24" | 15.5" x 15.5" | 1,2     |
| EF-2 | 1   | GSFRC       | 18.5           | 18.5" | 18.5" | 1.5" | 24" | 15.5" x 15.5" | 1,2     |

MAIL APPROVED DRAWINGS TO APPROPRIATE FACTORY BELOW:

WEBSITE: www.halton.com

HALTON CO. (USA)  
101 INDUSTRIAL DRIVE  
SCOTTSDALE, AZ 85254  
TEL: 480-912-1169

HALTON CO. (CANADA)  
1021 BREXK PLACE  
MISSISSAUGA, ONTARIO L4X 1L7  
TEL: 905-624-0301

PROJECT: SHAKE SHACK GAITHERSBURG, MD  
LOCATION: GAITHERSBURG, MD  
DRAWN BY: SKM DATE: 02.08.21  
SCALE: NOT TO SCALE  
CONSULTANT:

REVISION DESCRIPTION

| REV. | DATE      | DESCRIPTION |
|------|-----------|-------------|
| 1    | NO CHANGE |             |
| 2    |           |             |
| 3    |           |             |
| 4    |           |             |
| 5    |           |             |
| 6    |           |             |
| 7    |           |             |

DATE: 02.26.21

BY: SKM

APPROVED FOR FABRICATION

WITH CHANGES AS NOTED

WITH NO CHANGES

APPROVED BY: \_\_\_\_\_

DRAWING TITLE:  
**FAN DETAILS**

DRAWING No.:  
**U21-094**

REV. NO.: 1 SHEET NO.: 4 of 4

**NOTE:**  
THE DOCUMENTATION CONTAINED ON THIS SHEET WAS NOT PREPARED BY HENDERSON ENGINEERS AND IS INCLUDED IN THIS SET FOR REFERENCE ONLY. HENDERSON ENGINEERS REVIEWED THE DOCUMENTATION ON THIS SHEET FOR GENERAL COMPLIANCE WITH DESIGN INTENT. SUPPLIER IS RESPONSIBLE THAT ALL FURNISHED EQUIPMENT ON THIS SHEET COMPLIES WITH APPLICABLE LOCAL, STATE, AND FEDERAL LAWS, CODES, AND OLDER REGULATIONS.

PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE  
THE DOCUMENTATION CONTAINED ON THIS SHEET WAS NOT PREPARED BY HENDERSON ENGINEERS AND IS INCLUDED IN THIS SET FOR REFERENCE ONLY. HENDERSON ENGINEERS REVIEWED THE DOCUMENTATION ON THIS SHEET FOR GENERAL COMPLIANCE WITH DESIGN INTENT. SUPPLIER IS RESPONSIBLE THAT ALL FURNISHED EQUIPMENT ON THIS SHEET COMPLIES WITH APPLICABLE LOCAL, STATE, AND FEDERAL LAWS, CODES, AND OLDER REGULATIONS.

LICENSE # 52138  
EXPIRATION DATE: 1/8/2022

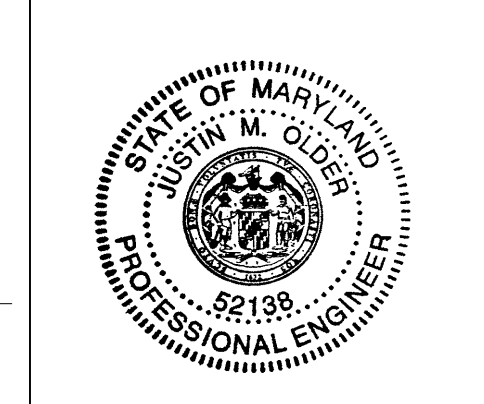
STORE NO:  
1366

**SHAKE SHACK**  
KENTLANDS SQUARE  
158 MARKET PLACE  
GAITHERSBURG, MD 20878

**REVISION**

| REV. | DATE     | DESCRIPTION     |
|------|----------|-----------------|
| 1    | 04/08/21 | CITY COMMENTS   |
| 2    | 05/03/21 | OWNER REVISIONS |

STATUS:  
PERMIT / BID SET



05/03/2021

FIELD VERIFICATION:  
The contractor shall verify all signed dimensions and location of the project site and notify Zebra Architecture, LLC of any dimensional errors, or omissions on this sheet for general compliance with design intent. Supplier is responsible for the installation method to be reproduced. Distribution, alteration, or reproduction of this drawing without the written consent of Zebra Architecture, LLC.

COPYRIGHT © 2021:  
Zebra Architecture, LLC, shall retain all common law, statutory and all other intellectual rights. Neither the documents nor the information herein is to be reproduced, distributed, disclosed or otherwise without the written consent of Zebra Architecture, LLC.

SHEET NAME:  
**HALTON DRAWINGS**

DATE: 04/08/21 PROJECT NO: 2050004103  
DRAWN: AJP SCALE: AS NOTED

SHEET NO:  
**M704**