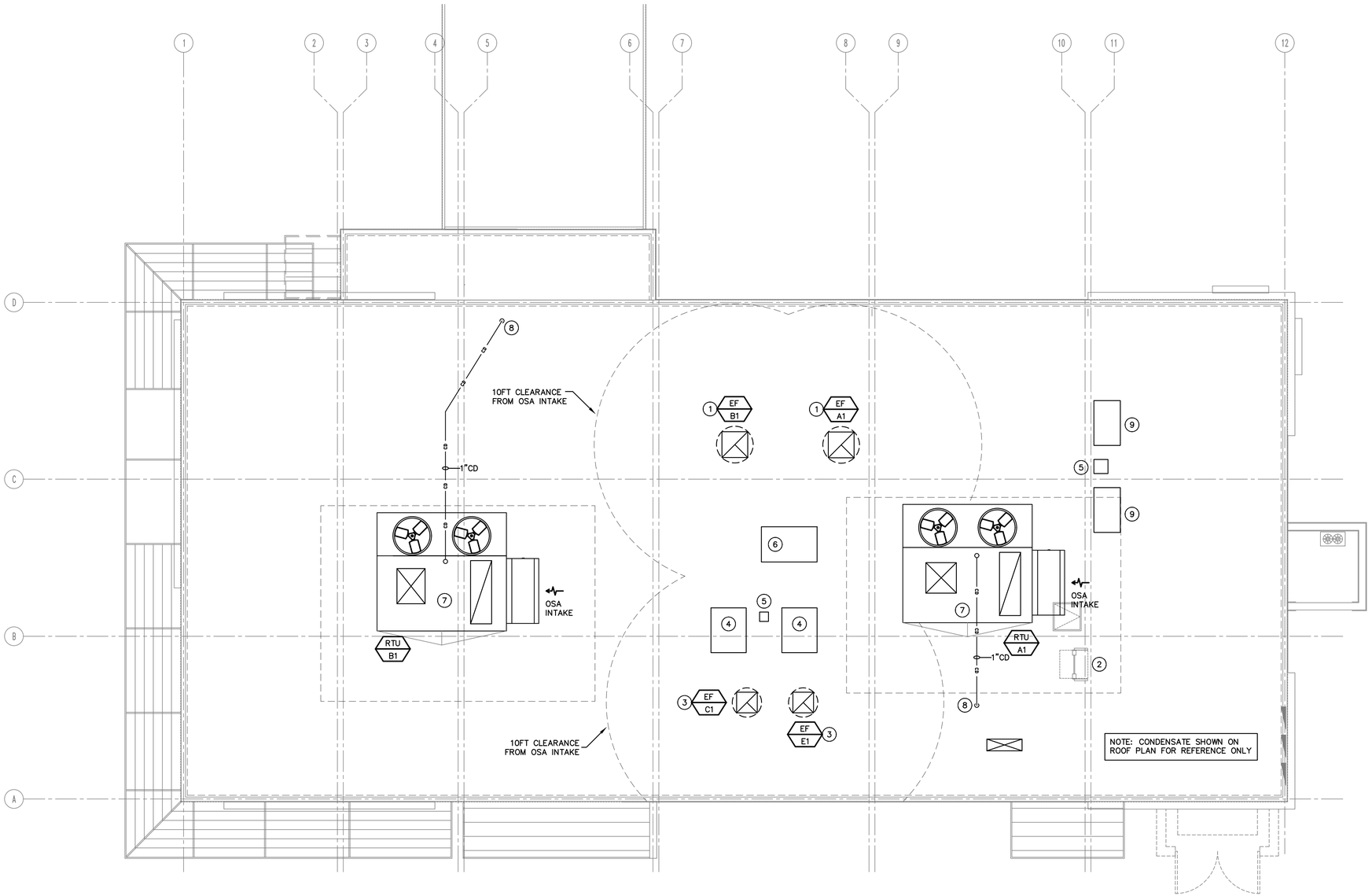


1/4" = 1'-0"

01/01 MECHANICAL ROOF PLAN

## KEYED NOTES : (#)

1. CENTRIFUGAL UPBLAST GREASE HOOD EXHAUST FAN MOUNTED ON MANUFACTURER PROVIDED ROOF CURB.
2. ROOF ACCESS HATCH.
3. CENTRIFUGAL DOWNBLAST EXHAUST FAN MOUNTED ON MANUFACTURER PROVIDED ROOF CURB.
4. KITCHEN ICEMAKER CONDENSING UNIT MOUNTED ON ROOFTOP, PROVIDED BY OWNER. COORDINATE EXACT LOCATION ON SITE AND ROUTE REFRIGERANT PIPING THROUGH ROOF PENETRATION (BY OTHERS).
5. REFRIGERATION PIPING ROOF PENETRATION (BY OTHERS).
6. KITCHEN MULTIPLEX CONDENSING UNIT MOUNTED ON ROOFTOP, PROVIDED BY OWNER. COORDINATE EXACT LOCATION ON SITE AND ROUTE REFRIGERANT PIPING THROUGH ROOF PENETRATION (BY OTHERS).
7. ROOF TOP UNIT: PROVIDE NEW AAON UNIT WITH ROOF CURB, SMOKE DETECTORS AND THERMOSTAT. SEE EQUIPMENT SCHEDULE ON SHEET M2.0 AND DETAIL 1/M3.0
8. ¾"CD DOWN IN WALL TO TERMINATE ABOVE RECEPTOR WITH AIR GAP.
9. CONDENSING UNIT FOR WALK-IN COOLER/FREEZER. COORDINATE EXACT LOCATION ON SITE AND ROUTE REFRIGERANT PIPING THROUGH ROOF PENETRATION (BY OTHERS).

## GENERAL NOTES :

1. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ROOF MOUNTED EQUIPMENT. MINIMUM OF 3'-0".
2. COORDINATE ALL EQUIPMENT LOCATIONS AND ROOF PENETRATIONS WITH THE GENERAL CONTRACTOR PRIOR TO BEGINNING WORK. USE SHOP DRAWINGS PROVIDED BY THE EQUIPMENT MANUFACTURER.
3. RTU AND EXHAUST FAN ROOF PENETRATIONS SHALL BE COORDINATED WITH STRUCTURAL PRIOR TO BEGINNING WORK.
4. REFERENCE ALL DETAILS ON SHEET NUMBER M3.0 FOR EQUIPMENT INSTALLATION.
5. ALL ROOF CURBS SHALL BE SEALED AIR TIGHT FOR BUILDING PRESSURE TESTING.

## CONDENSATE DRAINS

| TONNAGE | MIN. PIPE SIZE |
|---|---|
| 0 – 10 TONS | 3/4" |
| OVER 10 TONS | 1" |
| OVER 35 TONS | 1-1/4" |
| OVER 55 TONS | 1-1/2" |
| OVER 120 TONS | 2" |

SLOPE ALL CONDENSATE DRAIN PIPING AT MINIMUM 1/8" PER FOOT.

ALL CONDENSATE DRAIN PIPING SHALL BE TYPE "M" COPPER.

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WHATABURGER

Registered Professional Engineer Certificate
Kirk J. Hoffman
No. 24488
Date Signed 12-09-22
ARIZONA, U.S.A.
EXPIRES 03/31/24

MAVEN ENGINEERING
Job #22WBG273
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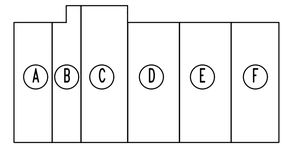
Fax: (480) 302-7927
8011 S Avenida del Yaqui
Guadalupe, Arizona 85283

Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

MODULE KEY PLAN

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1 4/5/23 DEVIATION COMM.
2 12/8/23 FIRE RISER RM

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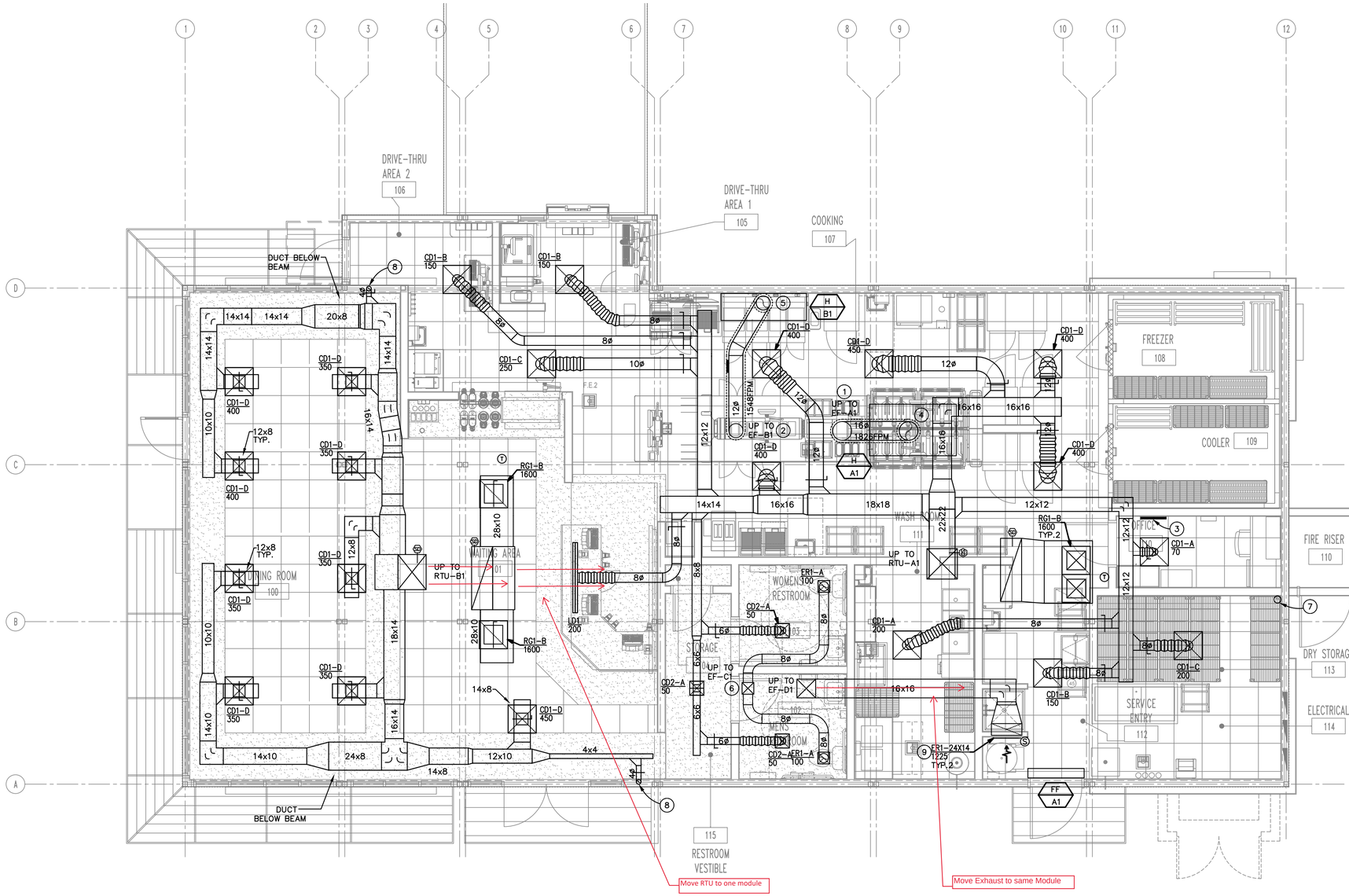
M0.1




1/4" = 1'-0"

01/01 MECHANICAL FLOOR PLAN

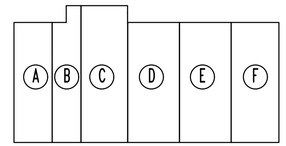
## KEYED NOTES :

1. 16"ø @ 1826 FPM DUCT WORK TO UPBLAST EXHAUST FAN ON ROOF. PROVIDE CAPTIVE AIRE DW LISTED TO UL2221 AND IS INSTALLED USING "V" CLAMP LOCKING. SEE DETAIL 2 SHEET M.3
2. 12"@ 1548 FPM DUCT WORK TO UPBLAST EXHAUST FAN ON ROOF. PROVIDE CAPTIVE AIRE DW LISTED TO UL2221 AND IS INSTALLED USING "V" CLAMP LOCKING. SEE DETAIL 2 SHEET M.3
3. EMERSON SITE SUPERVISOR DISPLAY AND CONTROLLER PANEL. RECESSED MOUNTED IN WALL.
4. CONNECT KITCHEN EXHAUST HOOD ABOVE GRILL UP TO EF-A1 WITH 16"ø. PRE FABRICATED UL2221 LISTED AND LABELED GREASE DUCT. PROVIDE TRANSITIONS ABOVE CEILING AS REQUIRED.
5. CONNECT KITCHEN EXHAUST HOOD ABOVE GRILL UP TO EF-B1 WITH 12"ø. PRE FABRICATED UL2221 LISTED AND LABELED GREASE DUCT. PROVIDE TRANSITIONS ABOVE CEILING AS REQUIRED.
6. 10X10 EXHAUST DUCT UP TO EF-C1 ON ROOF.
7. 6"ø RELIEF DUCT TO ROUTE FROM CRAWLSPACE UP THRU ROOF, TERMINATE WITH WEATHER CAP. REFERENCE DETAIL 9, SHEET M3.0.
8. 4"ø SUPPLY DUCT FOR CRAWLSPACE VENTILATION TO ROUTE DOWN IN WALL TO TERMINATE IN CRAWLSPACE. REFERENCE DETAIL 9, SHEET M3.0.
9. 24X14 EXHAUST REGISTER ON SIDEWALL, PROVIDE ONE WITH IN +12"AFF AND OTHER 12" BELOW FINISH CEILING. EXHAUST ONLY SHALL OPERATE IF ALARMED FROM C02 ALARM SYSTEM.

## GENERAL NOTES :

1. SPACE ALLOCATED FOR MECHANICAL AND OTHER WORK ABOVE THE SUSPENDED CEILINGS IS CRITICAL. LIGHT FIXTURES AND AIR DIFFUSERS HAVE BEEN LOCATED TO ACHIEVE A DEFINITE ARCHITECTURAL EFFECT AND MAY NOT BE CHANGED WITHOUT THE CONSENT OF THE ARCHITECT. BECOME FAMILIAR WITH THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS PRIOR TO FABRICATING AND INSTALLING ANY MATERIALS. HANG DUCTWORK AS CLOSE AS POSSIBLE TO THE STRUCTURE ABOVE, UNLESS INDICATED OTHERWISE.
2. PROVIDE A COPY OF A CERTIFIED AIR BALANCE REPORT TO THE CITY INSPECTOR PRIOR TO THE FINAL INSPECTION. THIS REPORT NEEDS TO BE CONDUCTED BY A 3RD PARTY CERTIFIED TO CONDUCT AN AIR BALANCE AND IS APPROVED BY THE ENGINEER OR ARCHITECT OF RECORD. THE REPORT SHALL DEMONSTRATE THAT THE MECHANICAL SYSTEM WILL MEET THE DESIGN CALCULATIONS AS INDICATED ON THE MECHANICAL PLANS.
3. PLANS SHALL CONFORM TO THE 2018 IMC, 2018 IECC AND ALL CITY OF GILBERT ADOPTED CODES AND AMENDMENTS.
4. MECHANICAL DESIGN IS INTENDED SO THAT THE AIR CONDITIONING SYSTEM WILL OPERATE CONTINUOUSLY DURING OCCUPIED HOURS TO MAINTAIN CURRENT VENTILATION REQUIREMENTS.
5. ALL DIFFUSERS AND GRILLES ARE LESS THAN 20LBS, CONTRACTOR SHALL POSITIVELY ATTACH TO CEILING MAIN RUNNERS
6. VENTS SHALL BE TERMINATED A MINIMUM OF 1'-0" ABOVE ROOF AND 2'-0" ABOVE OR 8'-0" AWAY FROM PARAPETS OR WALLS.
7. SEE ARCHITECTURAL PLANS FOR LOCATION OF PERMANENT ACCESS TO ROOF.
8. ALL NEW UNITS SHALL BE LOCATED AND INSTALLED BELOW THE PARAPET OR A SCREEN WALL PROVIDED,(SEE ARCHITECTURE DRAWINGS FOR SCREENING DETAILS).
9. THERMOSTATS AND HUMIDITY SENSORS SHALL BE LOCATED AT CEILING AND TIE INTO BUILDING CONTROL SYSTEM.
10. CALL FOR INSPECTION OF ALL MECHANICAL SYSTEM PRIOR TO COVER AND CONCEALMENT.

MODULE KEY PLAN

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M1.0

## Zone DINING Ventilation

| | | | |
|---|---|---|---|
| System Primary Airflow: $V_{ps}$ | 3,350 CFM | Zone Air Distribution Effectiveness: $E_z$ | 0.8 |
| Average Outdoor Air Fraction: $X_s$ | 0.229 | Primary Air Fraction to Zone: $E_p$ | 1 |
| Occupant Diversity: $D$ | 1 | Secondary Air Fraction to Zone: $E_r$ | 1 |
| Uncorrected Air Intake: $V_{ou}$ | 769 CFM | Fraction of Supply Air to Zone from Outside Zone: $F_a$ | 1 |
| System Ventilation Efficiency: $E_v$ | 0.977 | Fraction of Supply Air to Zone from Fully Mixed Primary Air: $F_b$ | 1 |
| Outdoor Air Intake: $V_{ot}$ | 787 CFM<br>0.235 | Fraction of Outdoor Air to Zone from Outside Zone: $F_c$ | 1 |

**Room Information**

| Room | Room Type | People Outdoor Air: Rate (CFM/person) $R_p$ | People $P_z$ | People Outdoor Air: Total (CFM) $R_p*P_z$ | Area Outdoor Air: Rate (CFM/ft²) $R_a$ | Area Outdoor Air: Area (ft²) $A_z$ | Area Outdoor Air: Total (CFM) $R_a*A_z$ | Breathing Zone Outside Airflow (CFM) $V_{bz}$ | Zone Outdoor Airflow (CFM) $V_{oz}$ | Zone Discharge Airflow (CFM) $V_{dz}$ | Discharge Outdoor Air Fraction $Z_d$ | Zone Ventilation Efficiency $E_{vz}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DINING | Food-Cafeteria/Fast Food Dining | 7.5 | 63 | 473 | 0.18 | 624 | 113 | 586 | 733 | 2,900 | 0.253 | 0.977 |
| LOBBY | Office-Main Entry Lobbies | 5 | 3 | 15 | 0.06 | 232 | 14 | 29 | 36 | 450 | 0.08 | 1.15 |

## Zone KITCHEN Ventilation

| | | | |
|---|---|---|---|
| System Primary Airflow: $V_{ps}$ | 3,570 CFM | Zone Air Distribution Effectiveness: $E_z$ | 0.8 |
| Average Outdoor Air Fraction: $X_s$ | 0.166 | Primary Air Fraction to Zone: $E_p$ | 1 |
| Occupant Diversity: $D$ | 1 | Secondary Air Fraction to Zone: $E_r$ | 1 |
| Uncorrected Air Intake: $V_{ou}$ | 591 CFM | Fraction of Supply Air to Zone from Outside Zone: $F_a$ | 1 |
| System Ventilation Efficiency: $E_v$ | 0.995 | Fraction of Supply Air to Zone from Fully Mixed Primary Air: $F_b$ | 1 |
| Outdoor Air Intake: $V_{ot}$ | 594 CFM<br>0.166 | Fraction of Outdoor Air to Zone from Outside Zone: $F_c$ | 1 |

**Room Information**

| Room | Room Type | People Outdoor Air: Rate (CFM/person) $R_p$ | People $P_z$ | People Outdoor Air: Total (CFM) $R_p*P_z$ | Area Outdoor Air: Rate (CFM/ft²) $R_a$ | Area Outdoor Air: Area (ft²) $A_z$ | Area Outdoor Air: Total (CFM) $R_a*A_z$ | Breathing Zone Outside Airflow (CFM) $V_{bz}$ | Zone Outdoor Airflow (CFM) $V_{oz}$ | Zone Discharge Airflow (CFM) $V_{dz}$ | Discharge Outdoor Air Fraction $Z_d$ | Zone Ventilation Efficiency $E_{vz}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KITCHEN | Food-Kitchen | 7.5 | 35 | 263 | 0.12 | 1,700 | 205 | 468 | 585 | 3,420 | 0.171 | 0.995 |
| RESTROOM | General-Restrooms | 0 | 0 | 0 | 0 | 120 | 0 | 0 | 0 | 100 | 0 | 1.17 |
| WALKWAY | General-Corridors | 0 | 0 | 0 | 0.06 | 73.9 | 5 | 5 | 6 | 50 | 0.12 | 1.05 |

## Load Total Summary - System

**(Includes Ventilation and Plenum Loads)**

| Location | Area | Cooling: CFM | Cooling: Peak | Cooling: btuh Total | Cooling: btuh Sensible | Cooling: btuh Latent | Cooling: Tons Total | Cooling: Tons Sensible | Cooling: Tons Latent | Cooling: ft² / ton | Cooling: CFM / ton | Cooling: CFM / ft² | Heating: CFM | Heating: btuh | Heating: kW | Heating: CFM / ft² |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Zone DINING | 855 ft² | 3,550 | July 4:00 p.m. | 111,000 | 99,800 | 11,200 | 9.3 | 8.3 | 0.9 | 92.5 | 384 | 4.15 | 736 | 36,100 | 10.6 | 0.86 |
| Zone KITCHEN | 1,900 ft² | 3,390 | July 4:00 p.m. | 90,600 | 90,600 | -3,100 | 7.6 | 7.6 | -0.3 | 251 | 449 | 1.79 | 571 | 27,800 | 8.2 | 0.3 |

## MECHANICAL EQUIPMENT SCHEDULE

NOTE:
1. AMBIENT TEMPERATURE 115 F COOLING, 31 F HEATING.
2. PROVIDE WITH PREMIUM EFFICIENCY MOTORS IN ACCORDANCE WITH NEMA MG1.
3. PROVIDE WITH SUPPLY AND RETURN SMOKE DETECTORS TO SHUT DOWN UNIT UPON SMOKE DETECTION.
4. PROVIDE WITHOUT CONTROLS
5. PROVIDE CONSTANT VOLUME PACKAGE
6. PROVIDE MODULATING OUTSIDE AIR DAMPER.
7. PROVIDE ULTRA LOW LEAKAGE ECONOMIZER WITH BAROMETRIC RELIEF DAMPER AND FAULT DETECTION AND DIAGNOSTIC.
8. PROVIDE FACTORY MOUNTED AND WIRED CONDENSATE FLOW SWITCH
9. PROVIDE FACTORY INTERNAL UNIT DISCONNECT
10. PROVIDE GFCI CONVENIENCE OUTLET
11. PROVIDE HAIL GAURDS.
12. APPROVED HVAC MANUFACTURERS ARE: AAON, ONLY. NATIONAL ACCOUNT
11. RTU-A1-B1 SHALL OPERATE SIMULTANEOUS WITH THE FOLLOWING: EF-A1, B1.
12. RTU-A1 & B1 ONLY INCLUDE THE REQUIRED HEATING POWER LOAD REQUIREMENT.

| | UNIT | | | | | | | | | COOLING | | | | HEATING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARK | MANUFACTURER | MODEL | SEER /EER | CFM | ESP "WG" | HP | VOLT | PH | FLA | SEN MBH | TOT MBH | ENT AIR DB | ENT AIR WB | COMP MBH | KW/ STAGES | VOLT | PH | OSA CFM | WEIGHT LBS | NOTES |
| RTU-A1 | AAON | RN-016-8-0-GB04 | 12.1 | 3570 | 1.19 | 3.0 | 208 | 3 | 167.1 | 150.4 | 165.3 | 92.1 | 66.6 | 153.9 | – | – | – | SEE CALC | 2405 | – |
| RTU-B1 | AAON | RN-015-8-0-GB04 | 11.2 | 3410 | 1.28 | 2.0 | 208 | 3 | 138.0 | 152.4 | 161.6 | 95.2 | 67.2 | 128.3 | – | – | – | SEE CALC | 1884 | – |
| EF-C1 | CAPTIVE AIRE | CUE-80-VG | – | 200 | 0.25 | 1/10 | 120 | 1 | – | – | – | – | – | – | – | – | – | – | 50 | – |
| EF-E1 | GREENHECK | G-130-A | – | 2343 | 0.25 | 0.50 | 120 | 1 | 9.8 | – | – | – | – | – | – | – | – | – | 75 | CO2 SENSOR CONTROLLED |

## KITCHEN EQUIPMENT SCHEDULE

| | UNIT | | | | | | | | | COOLING | | | | HEATING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARK | MANUFACTURER | MODEL | SEER /EER | CFM | ESP "WG" | HP | VOLT | PH | MCA | SEN MBH | TOT MBH | ENT AIR DB | ENT AIR WB | COMP MBH | KW/ STAGES | VOLT | PH | OSA CFM | WEIGHT LBS | NOTES |
| EF-A1 | COOK | 180VH7B | – | 2550 | 1.25 | 1.0 | 208 | 1 | 8.8 | – | – | – | – | – | – | – | – | – | 206 | HEAT SENSOR INTERLOCK W/ HOOD |
| EF-B1 | COOK | 150VH5B | – | 1216 | 0.75 | 0.5 | 208 | 1 | 5.4 | – | – | – | – | – | – | – | – | – | 156 | HEAT SENSOR INTERLOCK W/ HOOD |
| FF-A1 | MARS | STD242-1U | – | – | – | – | 208 | 1 | 2.5 | – | – | – | – | – | – | – | – | – | 65 | W/ DOOR SWITCH |

LEGEND: EXHAUST FAN (EF), SPLIT SYSTEM: INDOOR UNIT (IU), OUTDOOR UNIT (OU), ROOFTOP UNIT (RTU), AIR HANDLING UNIT (AHU), AIR CONDITIONER (AC), EVAPORATIVE COOLER (EC), MAKE-UP AIR UNIT (MUA)

H A1 — HOOD A1: HKI FABRICATED HOOD COMPLYING WITH UL710 & NFPA96 74"X44" WITH 2550 CFM EXHAUST @ 0.75 SP.

H B1 — HOOD B1: HKI FABRICATED HOOD COMPLYING WITH UL710 & NFPA96 73"X23" WITH 1216 CFM EXHAUST @ 0.75 SP.

## GRILLES, REGISTERS AND DIFFUSER SCHEDULE

NOTE:
1. PROVIDE OBD'S SHALL BE PROVIDED AT TAKE-OFF OF MAIN DUCT FOR ALL LAY-IN TYPE DIFFUSERS OR GRILLES AND OBD'S AT THE DIFFUSER OR GRILLE WHEN FLANGE TYPE.
2. SEE SIZING SCHEDULES FOR NECK AND FLEX DUCT SIZES, UNLESS OTHERWISE DIRECTED.
3. ALL LAY-IN DIFFUSERS OR GRILLES SHALL BE WHITE IN COLOR UNLESS DIRECTED OTHERWISE. ALL FLANGE TYPE DIFFUSERS, REGISTERS OR GRILLE COLORS SHALL BE AS DIRECTED BY THE ARCHITECT.
4. CONTRACTOR SHALL PROVIDE SQUARE TO ROUND ADAPTERS AS REQUIRED FOR INSTALLATION.
5. CONTRACTOR SHALL PROVIDE T-BAR BORDER IN ALL LAY-IN CEILINGS AND FLANGE TYPE BORDERS FOR ALL OTHER APPLICATIONS UNLESS OTHERWISE INDICATED.

| MARK | DESCRIPTION | MANUFACTURER | MODEL | MATERIAL | BORDER | FRONT BLADES | DAMPER | REMARKS |
|---|---|---|---|---|---|---|---|---|
| CD1-2 | CEILING DIFFUSER | TITUS | TDC | STEEL | NOTE 5 | HORIZONTAL | OBD | – |
| CD4 | CEILING DIFFUSER | TITUS | PAS | STEEL | NOTE 5 | HORIZONTAL | OBD | PERFERATED SUPPLY |
| RG1-2 | RETURN/EXH. REGISTER | TITUS | 350RS | STEEL | NOTE 5 | HORIZONTAL | – | – |

## AIR BALANCE SCHEDULE

| UNIT NAME | SUPPLY CFM | RETURN CFM | EXHAUST CFM | OUTSIDE AIR | RESULTING AIR |
|---|---|---|---|---|---|
| RTU-A1 | 3570 | 3200 | – | 2500 | +2500 |
| RTU-A2 | 3410 | 3200 | – | 2300 | +4800 |
| – | – | – | – | – | – |
| – | – | – | – | – | – |
| – | – | – | – | – | – |
| – | – | – | – | – | – |
| – | – | – | – | – | – |
| EF-A1 | – | – | 2550 | – | +2250 |
| EF-B1 | – | – | 1216 | – | +1034 |
| EF-C1 | – | – | 200 | – | +834 |
| – | – | – | – | – | – |
| – | – | – | – | – | – |
| – | – | – | – | – | – |
| TOTAL | 6,980 | 6,400 | 3,966 | 4,100 | +834 |

MAKE UP AIR THRU RTU-A1 AND A2.

## CRAWL SPACE VENTILATION

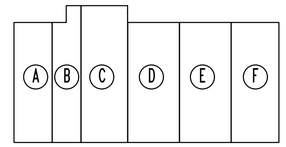
PER IBC 1202.4.3.1: 1 CFM PER 50 SF
CRAWL SPACE AREA: 2837 SF

2837 SF / 50 SF = 56.7
57.0 CFM REQUIRED

## DUCTWORK SYMBOLS

| SINGLE | DOUBLE | ABBR. | DESCRIPTION |
|---|---|---|---|
| | | ● | RECTANGULAR DUCT |
| | | ● | ROUND DUCT |
| | | ● | 45 DEG. TAP: USE AT BRANCH DUCTS ONLY |
| | | ● | DUCT SPLIT W/DAMPER: USE AT ELBOWS AND TEES: PROPORTION DUCT AREAS BY CFM'S |
| | | ● | CURVED ELBOW-MIN. RADIUS R: 1.5 WIDTH |
| | | ● | 90 DEG. ELBOW WITH SINGLE RADIUS TURNING VANES |
| | | ● | FLEXIBLE DUCT CONNECTION |
| | | FD | FIRE DAMPER |
| | | BD | BALANCING DAMPER (USE O.B.D. UNLESS NOTED OTHERWISE) |
| | | ● | SPIN-IN FLEX DUCT TAKE-OFF W/DAMPER |
| ● | | SA | SUPPLY AIR |
| ● | | EXH | EXHAUST AIR |
| ● | | RA | RETURN AIR |
| ● | | REL | RELIEF AIR |
| ● | | OSA | OUTSIDE AIR |
| ● | T X | T | THERMOSTAT X: UNIT OR ZONE NUMBER |
| ● | T X | T | THERMOSTAT W/SHERWOOD GUARD |
| | | | POINT OF CONNECTION |
| SD | | | SMOKE DUCT DETECTOR |

MODULE KEY PLAN





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WHATABURGER

Professional Engineer Certificate No. 24488 Kirk J. Hoffman Date Signed 12-9-22 ARIZONA, U.S.A. EXPIRES 03/31/24

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JOB NUMBER: 22-000252
DATE: 12-09-22
CONTENTS: MECHANICAL SCHEDULES

M2.0

# GRILLES, REGISTERS AND DIFFUSER SIZING SCHEDULE

CD1 INSTALL DIFFUSERS PER SCHEDULE BELOW. DO NOT EXCEED MAXIMUM CFM INDICATED
CD2 BASIS DESIGN TDC OR TDC–A, MAX 25 NC
–CD1 BORDER 1: LAYIN CEILING
–CD2 BORDER 6: HARD CEILING

PROVIDE DAMPER AT GRILLE

| | NECK SIZE | RD NECK SIZE | MAX CFM |
|---|---|---|---|
| A | 9 X 9 | 6" DIA | 85 |
| B | 12 X 12 | 8" DIA | 180 |
| C | 12 X 12 | 10" DIA | 300 |
| D | 15 X 15 | 12" DIA | 500 |
| E | 18 X 18 | 16" DIA | 750 |
| F | 21 X 21 | 21 X 21 | 1500 |

CD3 INSTALL DIFFUSERS PER SCHEDULE BELOW. DO NOT EXCEED MAXIMUM CFM INDICATED BASIS DESIGN TMR OR TMR–AA, MAX 25 NC

| | NECK SIZE | RD NECK SIZE | MAX CFM |
|---|---|---|---|
| A | – | 6" DIA | 100 |
| B | – | 8" DIA | 175 |
| C | – | 10" DIA | 273 |
| D | – | 12" DIA | 390 |
| E | – | 14" DIA | 530 |
| F | – | 16" DIA | 700 |
| G | – | 18" DIA | 885 |

CD4 INSTALL DIFFUSERS PER SCHEDULE BELOW. DO NOT EXCEED MAXIMUM CFM INDICATED BASIS DESIGN PAS, MAX 25 NC
–BORDER 1: LAYIN CEILING

PROVIDE DAMPER AT GRILLE

| | NECK SIZE | RD NECK SIZE | MAX CFM |
|---|---|---|---|
| A | 6 X 6 | 8" DIA | 100 |
| B | 10 X 10 | 10" DIA | 250 |
| C | 12 X 12 | 12" DIA | 350 |
| D | – | 14" DIA | 500 |
| E | – | 16" DIA | 560 |

RG1 INSTALL RETURN GRILLES PER SCHEDULE BELOW. DO NOT EXCEED MAXIMUM CFM INDICATED.
BASIS OF DESIGN: TITUS 350RS. MAX. 25 NC. PROVIDE PLENUM FOR DUCT CONNECTION IF REQUIRED

| 24 x 12 MODULE NECK SIZE | MAX CFM |
|---|---|
| 12 x 22 | 1100 |

| 24 x 24 MODULE NECK SIZE | MAX CFM |
|---|---|
| 22 x 22 | 1800 |

NOTE: USE SIZES OF FLEXIBLE DUCT SHOWN BELOW. SELECT DUCT SIZE FROM SCHEDULED CFM ON FLOOR PLANS. DO NOT EXCEED CFM LIMITS BELOW. PROVIDE 1:5 SLOPE TRANSITION BETWEEN DUCT AND OPENING.

| DUCT SIZE | MAX CFM |
|---|---|
| 6 | 85 |
| 8 | 180 |
| 10 | 300 |
| 12 | 500 |
| 14 | 700 |
| 16 | 1000 |
| 18 | 1400 |
| 20 | 1800 |
| 22 | 2300 |
| 24 | 3000 |

CD CFM NOMINAL SIZE

NOTE: FLEX DUCTWORK SHALL BE A MAXIMUM OF 8'–0"LONG AND MATCH THE NECK SIZE OF THE DIFFUSER OR GRILLE OR AS INDICATED ON THE DRAWINGS.

## DUCT SMOKE DETECTORS

THE 2018 IFC 907.3.1, SMOKE DETECTORS INSTALLED IN DUCTS SHALL BE LISTED FOR THE AIR VELOCITY, TEMPERATURE AND HUMIDITY PRESENT IN THE DUCT. DUCT SMOKE DETECTORS SHALL BE CONNECTED TO THE BUILDING'S FIRE ALARM CONTROL UNIT WHERE A FIRE ALARM SYSTEM IS REQUIRED BY SECTION 907.2. ACTIVATION OF A DUCT SMOKE DETECTOR SHALL INITIATE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY ATTENDED LOCATION AND SHALL PERFORM THE INTENDED FIRE SAFETY FUNCTION IN ACCORDANCE WITH THIS CODE AND THE INTERNATIONAL MECHANICAL CODE. IN FACILITIES THAT ARE REQUIRED TO BE MONITORED BY A SUPERVISING STATION, DUCT SMOKE DETECTORS SHALL REPORT ONLY AS A SUPERVISORY SIGNAL AND NOT AS A FIRE ALARM. THEY SHALL NOT BE USED AS A SUBSTITUTE FOR REQUIRED OPEN AREA DETECTION.

IF A FIRE ALARM SYSTEM IS NOT AVAILABLE, PROVIDE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY SUPERVISED LOCATION TRIGGERED BY THE ACTIVATION OF A DUCT SMOKE DETECTOR. INCLUDE THE AIR DUCT DETECTOR TROUBLE INDICATOR AS REQUIRED BY IMC 606.4.1, EXCEPTION 2."

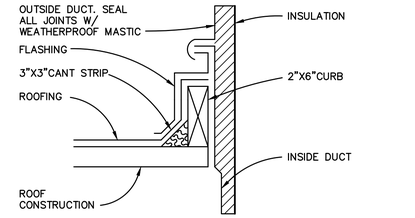
UPON ACTIVATION, THE SMOKE DETECTORS SHALL SHUT DOWN ALL OPERATIONAL CAPABILITIES OF THE AIR DISTRIBUTION SYSTEM IN A COMMON AREA INCLUDING MULTIPLE UNITS SERVING THAT AREA.

THE NFPA 72 SECTION 5.14.5.8 IS REVISED TO READ AS FOLLOWS: WHERE IN–DUCT SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS OR IN ARRANGEMENTS WHERE THE DETECTOR'S SUPERVISORY INDICATOR IS NOT READILY VISIBLE TO RESPONDING PERSONNEL, THE DETECTORS SHALL BE PROVIDED WITH REMOTE SUPERVISORY INDICATORS INSTALLED BELOW THE IN–DUCT SMOKE DETECTOR(S) AT CEILING LEVEL WHERE APPLICABLE. THIS REQUIREMENT SHALL BE APPLIED TO BOTH ADDRESSABLE AND NONADDRESSABLE FIRE ALARM SYSTEMS. ACCESS DOORS AND APPROPRIATE SIGNAGE SHALL BE PROVIDED WHERE NECESSARY.

INSPECTION REPORT OF HVAC AUTOMATIC SHUT–OFFS AND SMOKE DAMPERS PER 2018 IMC & IBC.

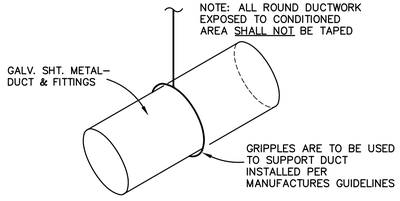
NEW INSTALLATIONS OF SMOKE DETECTORS ASSOCIATED WITH SMOKE DAMPERS AND HVAC SHUT–OFFS SHALL BE TESTED BY THE PROFESSIONAL ENGINEER OF RECORD, OR AN APPROVED TESTING AGENCY OR A QUALIFIED THIRD PARTY SPECIAL INSPECTOR. THE TESTING AGENCY OR QUALIFIED THIRD PARTY SPECIAL INSPECTOR SHALL BE AN APPROVED INDEPENDENT THIRD PARTY INDIVIDUAL OR FIRM SHALL NOT BE THE INSTALLING CONTRACTOR.
THE FINAL REPORT SUBMITTED TO THE FIRE INSPECTOR SHALL BE SIGNED, SEALED(WET) AND DATED PRIOR TO CERTIFICATE OF OCCUPANCY.

CONTRACTOR SHALL VERIFY WITH LOCAL CODE WHETHER INTER CONNECTING ALL SMOKE DUCT DETECTORS IS REQUIRE AND PROVIDE IF NEEDED.



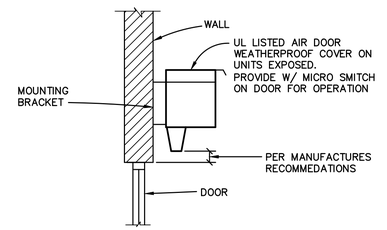

NOTE: UNINSULATED SIMILAR

5 DUCT THRU ROOF N.T.S.

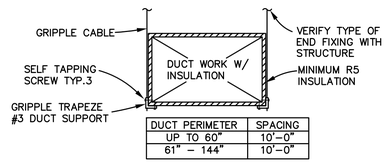



NOTE: PROVIDE STOPS & SUPPORTS @ 12'O.C.

6 ROUND DUCT SUPPORT N.T.S.

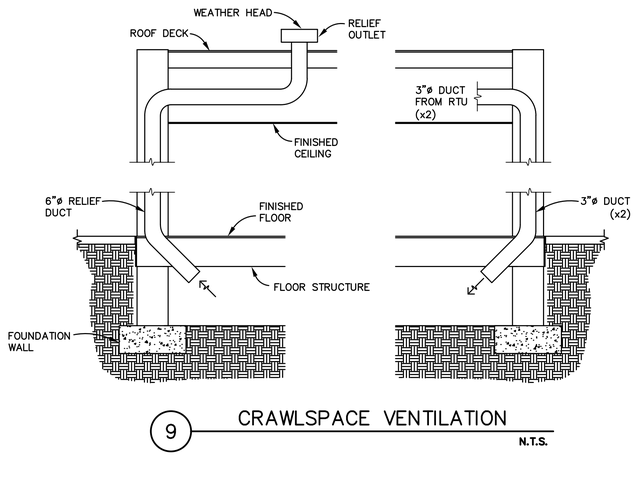



7 AIR DOOR N.T.S.

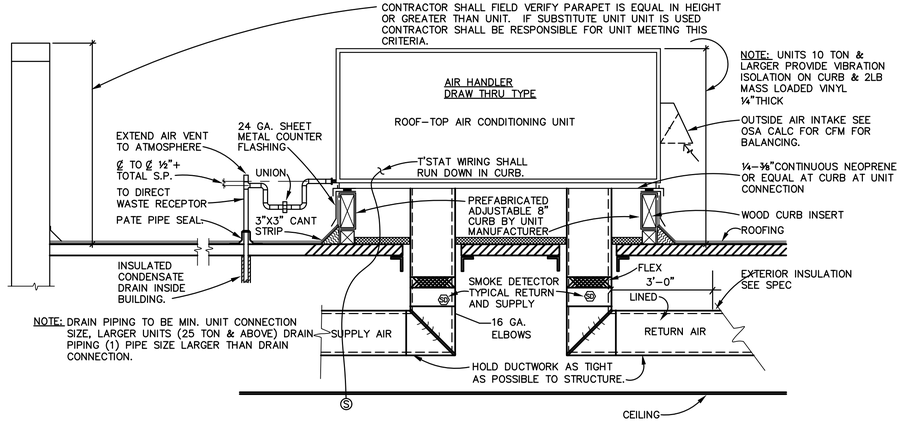



| DUCT PERIMETER | SPACING |
|---|---|
| UP TO 60" | 10'–0" |
| 61" – 144" | 10'–0" |

8 RETANGULAR DUCTWORK GRIPPLE SUPPORTS N.T.S.



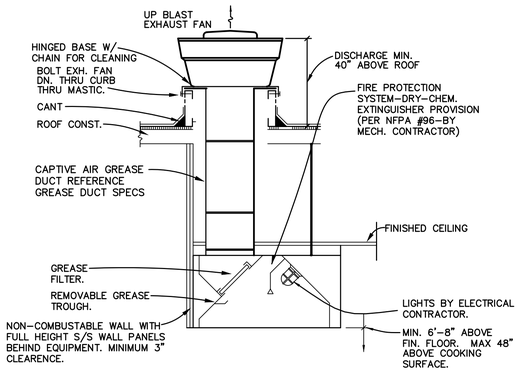

9 CRAWLSPACE VENTILATION N.T.S.




NOTE: DRAIN PIPING TO BE MIN. UNIT CONNECTION SIZE, LARGER UNITS (25 TON & ABOVE) DRAIN PIPING (1) PIPE SIZE LARGER THAN DRAIN CONNECTION.

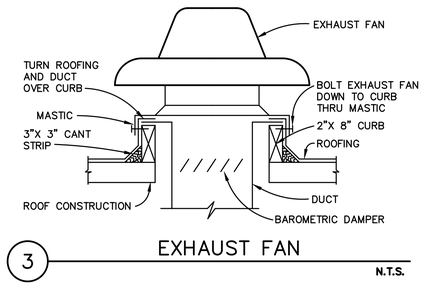
1 ROOF–TOP UNIT DETAIL N.T.S.

M1065



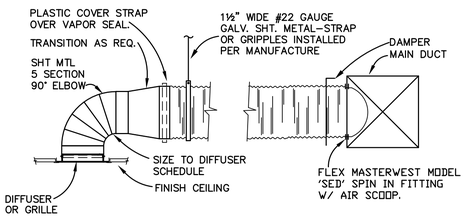

2 KITCHEN HOOD N.T.S.

GREASE DUCT SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW–3R" OR "DW– 32" ROUND 20 GAUGE 430 STAINLESS STEEL INNER DUCT INSULATED WITH A 24 GUAGE 430 STAINLESS STEEL OUTER SHELL. MODEL "DW–3R/32" IS LISTED TO UL–1978 AND –2221 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE. PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW–3R/32" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.



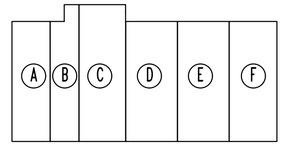

3 EXHAUST FAN N.T.S.

NOTE: FLEX DUCT CONNECTION WITH MINIMUM RADIUS OF 2 DIAMETERS IS AN ACCEPTABLE ALTERNATE. MAX FLEX DUCT 8'–0"




4 DIFFUSER INSTALLATION (W/ FLEX DUCTWORK) N.T.S.

MODULE KEY PLAN

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623-328-5196



WHATABURGER

Professional Engineer Certificate Kirk J. Hoffman No. 24488 Date Signed 12-09-22 Arizona, U.S.A. EXPIRES 03/31/24

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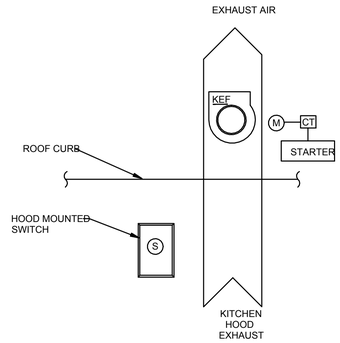
1 4/5/23 DEVIATION COMM.
2 12/8/23 FIRE RISER RM

CONTROL # 001
JOB NUMBER: 22-000252
DATE: 12-09-22
CONTENTS: MECHANICAL DETAILS

M3.0

# CONTROL SYMBOLS

| | |
|---|---|
| AE | ANALYZER ELEMENT |
| DDC | DIRECT DIGITAL CONTROL |
| BMS | BUILDING MANAGEMENT SYSTEM |
| RDC | ROOFTOP UNIT DDC CONTROLLER |
| FACP | FIRE ALARM CONTROL PANEL |
| DPI | DIFFERENTIAL PRESSURE INDICATOR |
| DPS | DIFFERENTIAL PRESSURE SWITCH |
| DPT | DIFFERENTIAL PRESSURE TRANSMITTER |
| EDH | ELECTRIC DUCT HEATER |
| EF | EXHAUST FAN |
| FE | FLOW ELEMENT |
| FLTR | FILTER |
| FS | FLOW SWITCH |
| H | HUMIDISTAT |
| HL | HIGH TEMPERATURE LIMIT SWITCH |
| M | MOTOR |
| PCV | PRESSURE CONTROL VALVE |
| PT | PRESSURE TRANSMITTER |
| SMK | SMOKE DETECTOR |
| T | TEMPERATURE SENSOR |
| TCV | TEMPERATURE CONTROL VALVE |
| TSL | LOW LIMIT THERMOSTAT (FREEZESTAT) |
| TT | TEMPERATURE TRANSMITTER |
| VFD | VARIABLE FREQUENCY DRIVE |
| STARTER | MOTOR STARTER (PROVIDE CONTROL RELAY) |
| CT | CURRENT TRANSDUCER |
| OS | OCCUPANCY SENSOR |
| CO | CARBON MONOXIDE SENSOR |
| | COMMUNICATION SIGNAL |
| HPS | HIGH STATIC PRESSURE SENSOR |
| DA | DAMPER ACTUATOR |
| CV | CONTROL VALVE |
| CC | CHILLED WATER HEATING COIL |
| HC | HOT WATER HEATING COIL |
| SF | SUPPLY AIR FAN |



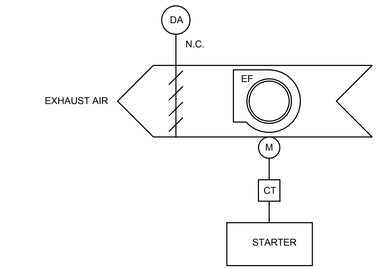

## SEQUENCE OF OPERATION

OPERATING CONDITIONS - CONTINUOUS 24/7: THE KITCHEN HOOD EXHAUST FAN SHALL RUN CONTINUOUSLY WHEN THE KITCHEN HOOD MOUNTED SWITCH IS ON.

INTEGRATED ANSUL FIRE SUPPRESSION SYSTEM UPON ACTIVATION OF THE INTEGRATED ANSUL FIRE SUPPRESSION SYSTEM DURING NORMAL KITCHEN OPERATION, THE KITCHEN HOOD EXHAUST FAN SHALL REMAIN ENERGIZED.

FIRE/SMOKE CONTROL: UPON SENSING A BUILDING FIRE ALARM, THE KITCHEN EXHAUST FAN SHALL BE CYCLED OFF THRU THE FIRE ALARM PANEL. FAN STATUS SHALL BE REPORTED TO THE BAS.

C3 KITCHEN EXHAUST CONTROLS
N.T.S.

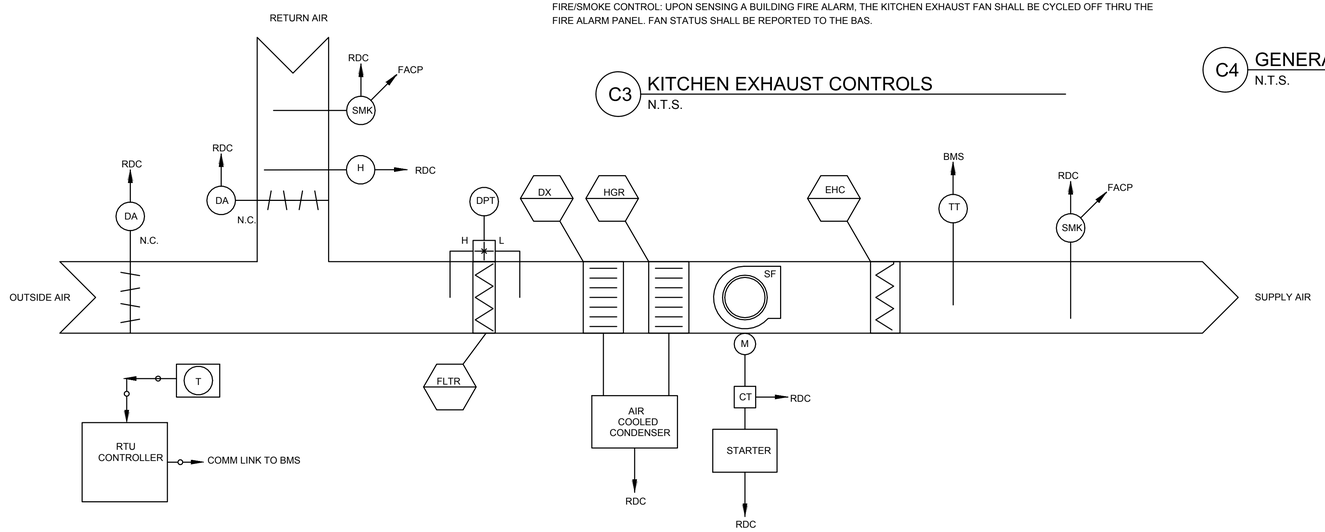



## SEQUENCE OF OPERATION

OPERATING CONDITIONS - CONTINUOUS 24/7: THE GENERAL EXHASUT FAN SHALL RUN CONTINUOUSLY. THE EXHAUST FAN SHUTOFF DAMPER SHALL BE INTERLOCKED WITH THE EXHAUST FAN TO OPEN WHEN THE FAN IS ENERGIZED AND CLOSE WHEN THE FAN IS DE-ENERGIZED

ALARMS:
ALARMS SHALL BE PROVIDED AS FOLLOWS:
1. FAN FAILURE: FAN COMMANDED ON BUT STATUS IS OFF.
2. FAN IN HAND: FAN COMMANDED OFF BUT STATUS IS ON.
3. FAN BELT FAILURE: MOTOR AMPERAGE READS ZERO AS MEASURED BY CURRENT TRANSDUCER.

C4 GENERAL EXHAUST CONTROLS
N.T.S.




## SEQUENCE OF OPERATION

OPERATING CONDITION - CONTINUOUS 24/7

THE RTU CONTROLLER (RDC) SHALL PERFORM ALL CONTROL, SAFETY AND INTERLOCKS AS DESCRIBED IN THE SEQUENCE OF OPERATION. THE BMS SHALL MONITOR THE RTU DDC CONTROLLER VIA BMS PROTOCOL COMMUNICATION AND/OR COMBINATION OF DISCRETE INPUT/OUTPUT POINTS. THE BMS SHALL OPERATE THE UNIT CONTINUOUS 24/7. WHEN THE UNIT IS DE-ENERGIZED BY THE BMS, THE FAN SHALL SHUT DOWN, THE OA DAMPER SHALL CLOSE. THE REFRIGERATION SYSTEM SHALL ALSO BE DE-ENERGIZED AND THE HEATING SYSTEM LOCKED OUT OF HEATING MODE.

TEMPERATURE CONTROL
OCCUPIED MODE - THE BMS WILL MAINTAIN THE FOLLOWING SPACE TEMPERATURE SETPOINTS:
• COOLING: 75°F (ADJUSTABLE)
• HEATING: 70°F (ADJUSTABLE)

HUMIDITY CONTROL
IF THE RELATIVE HUMIDITY OF THE RETURN AIR EXCEEDS 60% (ADJUSTABLE) AND THER IS NO CALL FOR COOLING IN THE SPACE, THE RDC SHALL ENABLE DEHUMIDIFICAITON MODE OF THE RTU BASED ON ITS OWN INTERNAL CONTROLS UTILIZING HOT GAS REHEAT.

ECONOMIZER OPERATION
BASED ON THE RTU INTERNAL CONTROLS, THE RDC SHALL VARY THE OUTSIDE AIR DAMPER POSITION, BASED ON CALL FOR COOLING IN THE SPACE. THERE SHALL BE ONE FAN SPEED. THE RDC SHALL LOAD AND UNLOAD COMPRESSORS BASED ON THE UNIT INTERNAL CONTROLS TO CONDITION OR DEHUMIDIFY THE SPACE AS NEEDED.

## SEQUENCE OF OPERATION (CONTINUED)

THE BMS SHALL BE PROGRAMMED SO THAT THE HEATING AND COOLING SYSTEMS SHALL NEVER OPERATE SIMULTANEOUSLY.

UNIT SHUTDOWN: UNIT SHALL BE DE-ENERGIZED UPON DETECTION OF SMOKE IN DUCT OR BUILDING FIRE ALARM.

ALARMS THE BMS SHALL MONITOR ALL SAFETIES ON THE REFRIGERATION SYSTEM AND THE HEATING SYSTEM THROUGH THE RDC COMMUNICATION PROTOCOL. ALL ABNORMAL CONDITIONS SHALL BE ALARMED AT THE BMS.

A. FILTERS THE RDC SHALL MONITOR THE STATIC PRESSURE DROP ACROSS THE FILTER BANK AND ALARM ON HIGH STATIC PRESSURE DROP. A DIFFERENTIAL PRESSURE SWITCH ACROSS THE FILTER SHALL INITIATE FILTER ALARM WHEN THE PRESSURE DROP ACROSS THE FILTER REACHES THE SETPOINT OF 1.0 INCHES W.C. (ADJUSTABLE).

B. FIRE/SMOKE CONTROL UPON ACTIVATION OF A DUCT SMOKE DETECTOR, THE BMS AND THE FIRE ALARM CONTROL PANEL SHALL RECEIVE AN ALARM.

C. GENERAL ALARM ANY TROUBLE ALARM OR FAULT WITHIN THE UNIT ONBOARD CONTROLS WILL GENERATE A GENERAL ALARM TO THE BMS.

A2 PACKAGED ROOFTOP UNIT CONTROLS DIAGRAM
N.T.S.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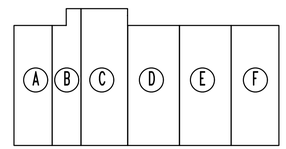
MODULE KEY PLAN





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EXPIRES 03/31/24

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1 4/5/23 DEVIATION COMM.
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CONTENTS: MECHANICAL CONTROLS

M3.1

AIR CONDITIONING SPECIFICATIONS

1. GENERAL REQUIREMENTS AND SCOPE OF WORK:
THE WORK INCLUDED UNDER THIS SECTION CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR, AND THE PERFORMING OF ALL FUNCTIONS, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR SHOWN ON THE DRAWINGS TO BE PERFORMED BY OTHERS, FOR THE INSTALLATION OF COMPLETE AND WORKING AIR CONDITIONING, HEATING AND VENTILATING SYSTEMS WHICH COMPLIES WITH ALL CODES. CHECK FIELD CONDITIONS AND MAKE MEASUREMENTS BEFORE ORDERING MATERIALS.

MAINTENANCE MANUAL SHALL INCLUDE ALL AVAILABLE MANUFACTURERS' OPERATION AND MAINTENANCE INSTRUCTIONS TOGETHER WITH THE RECORD DRAWINGS TO PROPERLY OPERATE AND MAINTAIN THE EQUIPMENT. THE MANUAL SHALL ALSO INCLUDE THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN ANY OF THE WORK SPECIFIED HEREIN.

THE CONTRACTOR MUST, AT HIS OWN EXPENSE, OBTAIN ALL NECESSARY PERMITS, PAY ALL LEGAL FEES AND CHARGES AND COMPLY WITH ALL STATE AND MUNICIPAL BUILDING AND SAFETY LAWS, ORDINANCES AND REGULATIONS RELATING TO BUILDING AND PUBLIC HEALTH & SAFETY. ALL WORK AND MATERIALS SHALL BE IN CONFORMANCE WITH THE GOVERNING CODES.

PROVIDE MECHANICAL EQUIPMENT HAVING MOTORS WITH MOTOR PROTECTORS AND INTEGRAL STARTERS. WIRING AND PROPER OPERATION OF THE MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. ALL WIRING SHALL BE ROUTED IN CONDUIT OR IN PLENUM RATED WIRING.

THE SYSTEM SHALL HAVE A WARRANTY COVERING LABOR, MATERIALS AND EQUIPMENT FOR A PERIOD OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. REPLACE OR REPAIR ALL DEFECTIVE WORKMANSHIP, EQUIPMENT, AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

THE MECHANICAL CONTRACTOR SHALL COORDINATE EXACT DIFFUSER AND GRILLE LOCATIONS WITH ELECTRICAL CONTRACTOR AND ALL OTHER TRADES AND ALSO COORDINATE SPACE AVAILABILITY FOR DUCTWORK ABOVE RECESSED LIGHTING TO AVOID RELOCATING DUCTWORK AT THE MECHANICAL CONTRACTORS EXPENSE. ALL AIR DISTRIBUTION DEVICES IN LAY-IN CEILING SHALL BE INDEPENDENTLY SUPPORTED TO THE STRUCTURE WITH A MINIMUM OF (2) SUPPORT RODS OR WIRES IN COMPLIANCE WITH SECTION 2.3.1.3 OF THE NFPA 90A & BUILDING CODE IF REQUIRED BY THE LOCAL CODE AUTHORITY.

SHOULD A CHANGE ORDER TO THE CONTRACT DOCUMENTS BE NECESSARY, THE CONTRACTOR SHALL SUBMIT A FORMAL CHANGE ORDER TO THE ARCHITECT/ENGINEER FOR REVIEW BEFORE ANY WORK COMMENCES. ANY WORK DONE WITHOUT PRIOR WRITTEN APPROVAL IS SUBJECT TO COMPLETION AT THE CONTRACTOR'S EXPENSE. CHANGE ORDERS SHALL INCLUDE A DETAILED MATERIAL, EQUIPMENT, AND LABOR TAKE-OFF IDENTIFYING ALL NEW AND CREDITED ITEMS. COSTS FOR SUCH ITEMS SHALL NOT EXCEED THE VALUES LISTED IN THE LATEST EDITION OF THE MEANS ESTIMATING GUIDE. ALL CHANGE ORDERS SHALL HAVE A LOCAL PRICING. NO TRAVEL EXPENSE

SPECIAL INSPECTIONS OR OBSERVATIONS SUCH AS DUCT SMOKE DETECTORS AND GREASE DUCT WRAP MAY REQUIRED THE PROFESSIONAL ENGINEER OF RECORD TO SEAL CERTIFICATE COMPLIANCE OR OBSERVE INSTALLATION ARE SUBJECT TO ADDITIONAL CHARGES MINIMUM OF $300.00 DEPENDING ON SIZE OF PROJECT.

PERFORM COMPLETE TESTING AND BALANCING OF ALL MECHANICAL SYSTEMS IN ACCORDANCE WITH AABC OR NEBB LATEST STANDARDS WITH REPORT. MECHANICAL CONTRACTOR TO PROVIDE BALANCE REPORT TO MECHANICAL INSPECTOR AT FINAL INSPECTION.

2. CONDENSATE DRAIN PIPING:
USE TYPE "M" HARD DRAWN COPPER FOR ALL CONDENSATE DRAIN LINES WITH MINIMUM FALL 1/8" PER FOOT FROM UNITS TO APPROVED PLUMBING CONNECTION. PROVIDE TRAPS AT UNIT AND INSTALL OVERFLOW DRAINS AS REQUIRED BY MECHANICAL CODE. TEST CONDENSATE PIPING TO HIGHEST POINT IN SYSTEM AND HOLD FOR FOUR HOURS.

3. DUCTWORK:
INSTALL ALL DUCTWORK IN ACCORDANCE WITH SMACNA GUIDELINES AND LOCAL STANDARDS FOR A MINIMUM OF 1" STATIC PRESSURE. RADIUS ELBOWS SHALL HAVE A MINIMUM RADIUS OF 1.5 TIMES THE DUCT DIMENSION IN THE DIRECTION OF TURN, AND SQUARE ELBOWS SHALL HAVE SINGLE THICKNESS TURNING VANES. ALL JOINTS SHALL BE TAPED WITH GLASS CLOTH AND HARDCAST OR ADHESIVE (UL LISTED). ALL DUCT SIZES ARE TO THE INSIDE OF LINING, INCREASE OUTSIDE DIMENSIONS AS NECESSARY. COVERINGS, LININGS, ADHESIVES AND INSULATION SHALL HAVE A SPREAD INDEX OF NOT OVER 25 AND A SMOKE-DEVELOPED INDEX OF NOT OVER 50. ALL INSULATION SHALL COMPLY WITH THE INTERNATIONAL ENERGY CONSERVATION CODE.

ALL INSULATION ADHESIVES & INSTALLATION SHALL COMPLY WITH NFPA_E 84.

CONCEALED DUCTS INSIDE OF BUILDING: SHALL BE SHEET METAL WRAPPED WITH 1" THERMAL INSULATION (MINIMUM OF R-6), WITH VAPOR BARRIER COVER.

EXPOSED SQUARE DUCTS INSIDE BUILDING AND DUCTS WITHIN 10 FEET OF A MECHANICAL UNIT SHALL BE SHEET METAL LINED WITH 1" ACOUSTICAL INSULATION. EXPOSED ROUND DUCTS DO NOT REQUIRE INSULATION.

FLEX DUCT: FLEX DUCT SHALL BE CLASS 0 OR 1 AND TESTED PER UL 181.

DUCTS OUTSIDE BUILDING OR IN UNCONDITIONED CEILING OR ATTIC SHALL BE SHEET METAL LINED WITH 2" ACOUSTICAL INSULATION (MINIMUM OF R-8).

4. GRILLES AND REGISTERS
GRILLES AND REGISTERS SHALL BE OF THE TYPE AND FINISH AS INDICATED ON THE DRAWINGS, COMPLETE WITH OPPOSED BLADE DAMPERS EXTRACTORS AND STRAIGHTENING GRIDS AS REQUIRED.

5. AIR CONDITIONING UNITS (PACKAGED HEAT PUMP)
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY TO FURNISH AND INSTALL FACTORY ASSEMBLED AND TESTED HEAT PUMP UNITS WITH INSULATED CASING, INDOOR BLOWER AND COIL, COMPRESSOR, CRANKCASE HEATER OUTDOOR FAN AND COIL, OSA INTAKE, AND CONTROL PANEL AND A SINGLE UNIT. INTERNAL DISPOSABLE FILTER. PROVIDE WIRE COIL GUARD AND ROOF CURB FOR ENTIRE UNIT. UNIT SHALL COME OPERATIONAL DOWN TO 20%F AMBIENT. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

CONTROLS AND POWER WIRING: THE CONTROLS SHALL INCLUDE A 7 DAY PROGRAMMABLE LOW VOLTAGE ROOM THERMOSTAT EQUAL TO HONEYWELL TH8000 SERIES WITH A FAN "ON-AUTO" SWITCH AND A SYSTEM "HEAT-OFF-COOL" SWITCH. EACH UNIT SHALL BE COMPLETELY FACTORY WIRED FOR TERMINAL CONNECTIONS OF THERMOSTAT AND POWER WIRING.

PROVIDE ONE POWER CONNECTION POINT FOR ALL ELECTRICAL WIRING UNLESS INDICATED OTHERWISE.

6. START-UP FOR MECHANICAL EQUIPMENT
ALL UNITS SHALL BE INSPECTED, CHECKED, AND STARTED UP BY MANUFACTURER'S FACTORY CERTIFIED HVAC TECHNICIAN. UPON COMPLETION, MANUFACTURER SHALL PROVIDE ONE YEAR PARTS AND LABOR WARRANTY.

7. EXHAUST FANS
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL EXHAUST FANS AND BLOWERS FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

PROVIDE ROOF CAPS, WALL CAPS, FLASHINGS, BASES, SPEED SWITCHES, APPROVED VIBRATION ISOLATORS, INTEGRAL INLET GRILLES, INTEGRAL STARTERS AND DUCT CONNECTIONS AS INDICATED OR SPECIFIED. PROVIDE INTERNAL DISCONNECTING MEANS AND OVERLOAD PROTECTION ON ALL UNITS 1/2 HP AND SMALLER AND/OR 120 VOLT, SINGLE PHASE. TWO SPEED MOTOR SHALL BE TWO WINDING TYPE. ALL BELT DRIVEN EXHAUST FANS SHALL HAVE ADJUSTABLE MOTOR PULLEYS FOR FAN SPEED CONTROL. RATE BELTS FOR 150% OF MOTOR RATED HP. ALL FANS, EXCEPT TOILET EXHAUST FANS 200 CFM AND BELOW, SHALL BE AMCA CERTIFIED AND APPROVED.

8. EVAPORATIVE COOLER:
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, AND SERVICES NECESSARY TO FURNISH AND INSTALL ALL EVAPORATIVE COOLERS COMPLETE AS INDICATED OR SPECIFIED FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

PRODUCT: PAD TYPE OR CEL-DEK EVAPORATIVE COOLING UNITS SHALL BE QUIET IN OPERATION AND FREE FROM VIBRATION AND WITH HEAVY DUTY PUMP, WATER MAKE_UP ASSEMBLY, ADJUSTABLE MOTOR PULLEY, VIBRATION ABSORBING MOUNTS AND OVERFLOW DRAIN WITH BLEED FITTINGS. PROVIDE SLIDE DAMPER IN ACCESSIBLE LOCATION AT FAN DISCHARGE. COOLER MANUFACTURERS SHALL BE RESPONSIBLE FOR PROVIDING SPECIFIED AIR QUANTITIES AT SPECIFIED CONDITIONS. ALL COOLERS MUST HAVE CERTIFIED RATINGS AND BE UL LISTED.

9. KITCHEN HOOD AND FAN:
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL KITCHEN HOOD AND VENTILATION UNIT, INCLUDING ALL DUCTWORK, BLOWERS, FIRE SUPPRESSION SYSTEM, MASTER ELECTRIC CONTROLS AND FILTER SECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID. UNIT SHALL BE UL LISTED AND LABELED.

HOOD: THE HOOD SHALL BE DOUBLE SHELL TYPE, 18 GAUGE STAINLESS STEEL INNER LINER WITH 18 GAUGE GALVANIZED OUTER LINER WITH SATIN FINISH STAINLESS STEEL ON THE ENTIRE OUTER SHELL INCLUDING FACING, ENDS, AND SLOTS. AIR SHALL BE AS INDICATED ON PLANS. FABRICATION WILL BE IN ACCORDANCE WITH NFPA NO. 96 REQUIREMENTS AND BEAR THE NSF SEAL AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE. THE INNER HOOD SHALL BE REINFORCED AND STIFFENED AND ALL JOINTS AND SEAMS WELDED. SUPPLY AIR VELOCITY WILL NOT EXCEED APPROXIMATELY 300-450 FEET PER MINUTE DEPENDING ON COOLING EQUIPMENT TO BE VENTILATED. THE HOOD SHALL BE HUNG FROM THE ROOF STRUCTURE WITH SOLID STEEL RODS WITH TURN BUCKLES. A 24 VOLT, PREWIRED, FLUSH MOUNTED HOOD CONTROL PANEL SHALL CONTAIN SEPARATE SWITCHES WITH SIGNAL LIGHTS FOR EXHAUST, MAKE-UP AIR, HEAT, AND INTERNAL LIGHTING. ALL HOOD LIGHTING WILL BE OF THE APPROVED VAPOR PROOF TYPE WITH CLEAR GLOBE AND CAST ALUMINUM GUARD, 36" MAXIMUM SPACING AND WIRED 110 VOLT TO A JUNCTION BOX AT THE TOP OF HOOD. LOW VOLTAGE WIRING IN CONDUIT CONFORMING TO NEC NO. 70 WILL BE PROVIDED IN THE FORM OF A WIRING HARNESS TO COMPLETE THE ELECTRICAL CIRCUITRY. ALL GREASE FILTERS 20" X 20" X 2" WILL BE PROVIDED ALONG WITH APPROPRIATE FILTER BLANKS TO PROVIDE FILTER MANUFACTURER'S OPTIMUM GREASE REMOVAL EFFICIENCY, AFI RATED.

VENTILATION: THE ROOF MOUNTED VENTILATION UNIT INCLUDING ALL COMPONENTS SHALL BE FULLY FACTORY ASSEMBLED AND WIRED IN ACCORDANCE WITH THE NEC. THE SYSTEM SHALL INCLUDE: CENTRIFUGAL SUPPLY FAN(S) WITH FORWARDLY CURVED BLADES WITH ADJUSTABLE BELT DRIVE, ALL MOUNTED IN A SHEET METAL HOUSING, EXHAUST FAN(S), POWER ROOF VENTILATOR TYPE WITH UP-BLAST DISCHARGE, ADJUSTABLE BELT DRIVEN CENTRIFUGAL FAN AND SPUN ALUMINUM HOUSING, FILTER SECTION FOR SUPPLY AIR WITH SIDE ACCESS SLIDE-IN FRAME, 2" OILED METAL, CLEANABLE AIR FILTERS IN AN ACCESS HOUSING, A FACTORY WIRED MASTER CONTROL PANEL OF THE VOLTAGE SPECIFIED, MOUNTED IN A WEATHERPROOF BOX, SHALL CONTAIN IN ADDITION TO TERMINALS AND WIRING FOR ABOVE, MAGNETIC STARTERS WITH THREE LEG OVERLOAD AND DISCONNECT SWITCHES FOR SUPPLY AND EXHAUST FANS AND CONTROL TRANSFORMER. ALL ELECTRICAL WORK SHALL BE DONE BY ONE MANUFACTURER IN ACCORDANCE WITH SYSTEM DESIGN AND IN STRICT ADHERENCE TO THE NEC, SUPPLY FAN, HEATING AND FILTER SECTIONS WILL BE ONE INTEGRATED UNIT, MOUNTED ON ADJUSTABLE SUPPORTS FOR POST MOUNTING. AN INSULATED STEEL WALL ROOF CURB IS PART OF THE FURNISHED SYSTEM, MASTER DISCONNECT SWITCHES AND WIRING TO THE MASTER ELECTRIC PANEL WILL ALSO BE INCLUDED.

ALL DUCT WORK WILL BE 16 GAUGE GALVANIZED WELDED EXHAUST, AND 18 GAUGE GALVANIZED SUPPLY, CONFORMING TO NFPA NO. 96.

EXTERIOR SURFACES OF ALL ROOF EQUIPMENT WILL BE WEATHERPROOF ENAMEL COATED.

10. AIR CURTAINS
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY TO FURNISH AND INSTALL AIR CURTAINS FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

GENERAL: FURNISH COMPLETE FACTORY ASSEMBLED UNITS CONSISTING OF CASING, SPLIT HOUSING FAN SCROLLS. CENTRIFUGAL FANS, INLET SCREEN, DISCHARGE GRILLE AND MOTOR SPECIFICALLY DESIGNED TO PROVIDE A UNIFORM VELOCITY ACROSS THE ENTIRE WIDTH OF UNIT. LOCATE GREASE FITTINGS OUTSIDE CABINET OR PROVIDE EASILY REMOVABLE ACCESS PANELS. UNIT CASINGS WHERE EXPOSED INSIDE A KITCHEN SHALL BE STAINLESS STEEL. MOTORS SHALL BE TOTALLY ENCLOSED, AIR OVER EQUIPPED WITH HEAVY DUTY THRUST BEARINGS AND DOUBLE EXTENDED SHAFTS REQUIRING NO OUTBOARD BEARINGS.

WHERE INDICATED ON THE DRAWINGS, FURNISH A DOOR SWITCH TO ENERGIZE THE UNIT WHENEVER THE DOOR IS OPENED. UNITS SHALL BE PROVIDED WITH FACTORY MOUNTED, FACTORY WIRED CONTROL PANELS (3 PHASE ONLY) INCLUDING MOTOR STARTERS, TRANSFORMER FOR LOW DOOR SWITCH AND TERMINAL STRIP FOR CONNECTION TO POWER SOURCE. WHEN SHOWN FOR OUTDOOR WEATHER EXPOSED MOUNTING, UNITS PROVIDED WITH WATERPROOF JUNCTION BOXES.

**COMcheck Software Version 4.1.5.1**

# Mechanical Compliance Certificate

**Project Information**

| | |
|---|---|
| Energy Code: | 2018 IECC |
| Project Title: | WHATABURGER |
| Location: | Gilbert, Arizona |
| Climate Zone: | 2b |
| Project Type: | New Construction |

Construction Site:
GILBERT, AZ

Owner/Agent:

Designer/Contractor:
MAVEN ENGINEERING
8011 S. AVENIDA DEL YAQUI
GUADALUPE, AZ 85283
480-303-0180

**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-A1 (Single Zone):<br>Single Package Heat Pump<br>Heating Mode: Capacity = 240 kBtu/h,<br>Proposed Efficiency = 3.20 COP, Required Efficiency = 3.20 COP<br>Cooling Mode: Capacity = 240 kBtu/h, , Air Economizer<br>Proposed Efficiency = 10.80 EER, Required Efficiency: 9.50 EER + 10.6 IEER<br>Fan System: Unspecified |
| 1 | RTU-A2 (Single Zone):<br>Single Package Heat Pump<br>Heating Mode: Capacity = 240 kBtu/h,<br>Proposed Efficiency = 3.20 COP, Required Efficiency = 3.20 COP<br>Cooling Mode: Capacity = 240 kBtu/h, , Air Economizer<br>Proposed Efficiency = 10.80 EER, Required Efficiency: 9.50 EER + 10.6 IEER<br>Fan System: Unspecified |
| 1 | WH-1:<br>Electric Instantaneous Water Heater, Capacity: 52 gallons 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.

KIRK HOFFMAN, PE — Name - Title
Signature
3/25/22 — Date

Project Title: WHATABURGER
Data filename: C:\Users\M-X\Maven Dropbox\Aaron Weimer\Maven Engineering\2022\22WBG273 - WHATABURGER\docs\IECC - 2018.cck
Report date: 09/21/22
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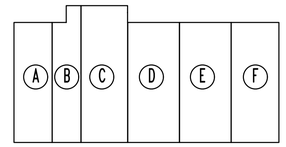
MODULE KEY PLAN




MAVEN ENGINEERING
Job #22WBG273
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8011 S Avenida del Yaqui
Guadalupe, Arizona 85283

Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

RJ RUSSO LLC
3836 W BUCKEYE RD
BUILDING C
PHOENIX, AZ 85009
623-328-5196



WHATABURGER

Registered Professional Engineer — Certificate No. 24488 — Kirk J. Hoffman — Date Signed 03/25/22 — State of Arizona, U.S.A. — EXPIRES 03/31/24

WHATABURGER

1 4/5/23 DEVIATION COMM.
2 12/8/23 FIRE RISER RM

CONTROL # 001
JOB NUMBER: 22-000252
DATE: 12-09-22
CONTENTS: MECHANICAL SPECIFICATIONS

M4.0