

MECHANICAL SYMBOLS ABBREVIATIONS

(SOME SYMBOLS MAY NOT BE USED ON THE DRAWINGS)

%	PERCENT
ABS	ABSOLUTE
ACC	AIR-COOLED CHILLER
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
AF	AIR FOIL
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTITUDE
AMB	AMBIENT
AMCA	AIR MOVEMENT AND CONTROL ASSOCIATION
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARI	AIR-CONDITIONING AND REFRIGERATION INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR-CONDITIONING ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
AVG	AVERAGE
B	BOILER
BD	BACKDRAFT DAMPER
BG	BELOW GRADE
BEMCS	BUILDING ENERGY MANAGEMENT AND CONTROL SYSTEM
BHP	BRAKE HORSEPOWER
BI	BACKWARD INCLINED
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
CD	COLD DECK
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CHET	CHILLED WATER EXPANSION TANK
CMPR	COMPRESSOR
COND	CONDENSER
CRAC	COMPUTER ROOM AIR CONDITIONER
CT	COOLING TOWER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CU IN	CUBIC INCH
dB	DECIBEL
DB	DRY BULB
DCP	DISTRIBUTED CONTROL PANEL
DEG	DEGREE
DIA	DIAMETER
DWG	DRAWING
DX	DIRECT-EXPANSION
EAT	ENTERING AIR TEMPERATURE
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ENT	ENTERING
ESP	EXTERNAL STATIC PRESSURE
EXP	EXPANSION
F	FAHRENHEIT
FA	FACE AREA
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FH	FUME HOOD
FLEX	FLEXIBLE
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PIPE
FS	FLOW SWITCH
FSD	COMBINATION FIRE-SMOKE DAMPER
FT	FEET OR FOOT
FTU	FAN TERMINAL UNIT
GA	GAUGE OR GAGE
GAL	GALLONS
GALV	GALLVANIZED
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRAINS
H	ENTHALPY
HD	HEAD
HD	HOT DECK
HG	HEAT GAIN OR MERCURY
HGT	HEIGHT
HP	HORSEPOWER
HPS	HIGH PRESSURE STEAM
HR	HOUR
HTHW	HIGH TEMPERATURE HEATING WATER
HVAC	HEATING/VENTILATING/AIR-CONDITIONING
HVU	HEATING AND VENTILATING UNIT
HWR	HEATING HOT WATER RETURN
HWS	HEATING HOT WATER SUPPLY
HZ	FREQUENCY
ID	INSIDE DIAMETER
IPS	INTERNATIONAL PIPE STANDARD
ips	IRON PIPE SIZE
K	THERMAL CONDUCTIVITY
KH	KITCHEN HOOD
KW	KILOWATT

LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LF	LINEAR FEET
LG	LENGTH
LPS	LOW PRESSURE STEAM
LTHW	LOW TEMPERATURE HOT WATER
LWT	LEAVING WATER TEMPERATURE
MCA	MINIMUM CIRCUIT AMPACITY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MAX	MAXIMUM
MBH	BTU PER HOUR (THOUSAND)
MIN	MINIMUM
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NA	NOT APPLICABLE
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OBD	OPOSED BLADE DAMPER
OD	OUTSIDE DIAMETER
PD	PUMPED DISCHARGE
PBD	PARALLEL BLADE DAMPER
PH	PHASE (ELECTRICAL)
PPM	PARTS PER MILLION
PRESS	PRESSURE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ABSOLUTE
PSIG	PSI GAGE
R	RANKINE
R-22	REFRIGERANT (NUMBER INDICATES TYPE)
RA	RETURN AIR
RAF	RELIEF AIR FAN
RECIRC	RECIRCULATE
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SC	SHADING COEFFICIENT
SCFM	CUBIC FEET PER MINUTE-STANDARD CONDITIONS
SD	SMOKE DAMPER
SEC	SECOND
SF	SQUARE FEET
SG	SPECIFIC GRAVITY
SHG	SENSIBLE HEAT GAIN
SHR	SENSIBLE HEAT RATIO
SP	STATIC PRESSURE
SPEC	SPECIFICATION
SQ	SQUARE
SSD	SUB-SOIL DRAINAGE
STD	STANDARD
SUCT	SUCTION
T	TEMPERATURE SENSOR
TD	TEMPERATURE DIFFERENCE
TEMP	TEMPERATURE
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT
TONS	TONS OF REFRIGERATION
TOP	TOP OF PIPE
TOS	TOP OF STEEL
TSP	TOTAL STATIC PRESSURE
T-STAT	THERMOSTAT
TU	TERMINAL UNIT
TYP	TYPICAL
U	HEAT TRANSFER COEFFICIENT
UH	UNIT HEATER
UF	UNDER FLOOR
V	VOLT
VA	VOLT AMPERE
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VENT	VENTILATION
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VP	VELOCITY PRESSURE
W	HUMIDITY RATIO OR WATT
W.C.	WATER COLUMN
W.G.	WATER GAUGE
WB	WET BULB
WT	WEIGHT
YR	YEAR

SHEET SYMBOLS

X **DETAIL TITLE**
SCALE: 1/2" = 1'-0"

	Ref North	NORTH ARROW
	NECK/CFM BUBBLE	
	AHU-1 OR RTU-XXX	EQUIPMENT TAG
	AIR FLOW INDICATOR	
	NOTE BY SYMBOL (KEYNOTE)	
	REVISION	
	POINT OF CONNECTION (NEW TO EXISTING)	
	POINT OF DISCONNECTION	

MECHANICAL EQUIPMENT

	COMBINATION FIRE/SMOKE DAMPER
	FIRE DAMPER
	SMOKE DAMPER
	NEW EQUIPMENT (SIZE, SHAPE WILL VARY)
	FUTURE KITCHEN / VENTILATION EQUIPMENT (SIZE, SHAPE WILL VARY)
	EQUIPMENT TO REMAIN (SIZE, SHAPE WILL VARY)
	DUCT STATIC PRESSURE SENSOR
	DIFFERENTIAL PRESSURE SENSOR
	WALL MOUNTED THERMOSTAT
	TEMPERATURE SENSOR
	HUMIDITY SENSOR
	CARBON DIOXIDE SENSOR
	OCCUPANCY SENSOR

DUCTWORK

	DIFFUSER FLOW ARROWS (IF NO ARROWS ARE SHOWN, DIFFUSER IS 4-WAY THROW)
	SUPPLY DIFFUSER
	ROUND SUPPLY DIFFUSER
	RETURN REGISTER
	EXHAUST REGISTER
	SIDEWALL SUPPLY GRILLE
	SIDEWALL RETURN GRILLE
	LOUVER W/ SCREEN (IN WALL)
	SLOT DIFFUSER
	LINEAR DIFFUSER
	RETURN AIR SLOT DEVICE
	MANUAL OPPOSED BLADE DAMPER
	MANUAL BLADE DAMPER
	90° ELBOW W/ TURNING VANES
	90° MITERED ELBOW
	45° MITERED ELBOW
	90° LONG RADIUS ELBOW
	45° LONG RADIUS ELBOW
	CONCENTRIC TRANSITION
	ECCENTRIC TRANSITION
	RECTANGULAR TO ROUND TRANSITION
	RECTANGULAR BRANCH TAP (SMACNA 45)
	CONICAL BRANCH TAP
	CONICAL LATERAL BRANCH TAKE-OFFS
	DUCT CAP
	DUCT CONTINUATION - ROUND
	DUCT CONTINUATION - RECTANGULAR
	DUCT ACCESS DOOR
	SUPPLY DUCT (UP / DOWN)
	RETURN DUCT (UP / DOWN)
	EXHAUST DUCT (UP / DOWN)
	ROUND DUCT (UP / DOWN)
	RECTANGULAR DUCT SIZE (WIDTH x HEIGHT)
	ROUND DUCT SIZE
	FLEXIBLE DUCT CONNECTION
	FLEXIBLE DUCT

DUCTWORK

	MOTORIZED DAMPER
	OPPOSED BLADE MOTORIZED DAMPER
	BACKDRAFT DAMPER
	FLEXIBLE DUCT CONNECTION
	MAJOR SPLIT
	TRANSFER BOOT

PIPING SYMBOLS

	PIPING UP
	PIPING DOWN
	CLEANOUT
	DIRECTION AND MAGNITUDE OF SLOPE
	CONDENSATE DRAIN

HVAC DESIGN CRITERIA

ASHRAE FUNDAMENTALS - 2021:	SUMMER COOLING DESIGN (0.4%):
WEATHER STATION - GASTONIA, NC	94.6 °F DRY BULB
ELEVATION: 797'	77.4 °F WET BULB
WINTER HEATING DESIGN (99.6%):	
20.6 °F DRY BULB	

GENERAL NOTES

- PERFORM WORK IN ACCORDANCE WITH THE LATEST EDITIONS, REVISIONS, AMENDMENTS OR SUPPLEMENTS OF APPLICABLE STATUTES, ORDINANCES, CODES OR REGULATIONS OF FEDERAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION IN EFFECT ON THE DATE BIDS ARE RECEIVED.
- PROVIDE ALL SYSTEMS AS COMPLETE WITH ALL REQUIRED ACCESSORIES FOR CODE COMPLIANCE.
- REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS FOR CONSTRUCTION.
- DUCTWORK SIZES SHOWN ARE FREE AIR STREAM DIMENSIONS.
- INSTALL DUCTWORK AND PIPING TO PROVIDE THE MAXIMUM POSSIBLE CLEAR HEIGHT UNDERNEATH. (BETWEEN STRUCTURE OR CEILING AND TOP OF DUCT).
- WHERE APPROVAL CODES HAVE BEEN ESTABLISHED BY OSHA, UNDERWRITER'S LABORATORY, AMERICAN CODES, ANSI, ASME, ASA, ASHRAE, ASTM, ARI, NEL, NFPA, SMACNA, OR THE STATE FIRE INSURANCE REGULATORY BODY, FOLLOW THESE STANDARDS WHETHER OR NOT INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
- PROVIDE THE ENTIRE SYSTEM AND ITS COMPONENT ITEMS OF EQUIPMENT IN OPERATING CONDITION FREE OF OBJECTIONABLE VIBRATION OR NOISE.
- COORDINATE WORK SO THAT INTERFERENCES BETWEEN PIPING, DUCTWORK, EQUIPMENT, PLUMBING WORK, ELECTRICAL WORK, AND BUILDING STRUCTURE WILL BE AVOIDED.
- FURNISH ACCESS DOORS FOR INSTALLATION IN WALLS AND CEILINGS WHERE ACCESS IS REQUIRED TO CONCEALED MECHANICAL EQUIPMENT, VALVES, DAMPERS, CONTROLS AND OTHER DEVICES.
- COORDINATE THE EXACT LOCATION OF DRAIN AND MECHANICAL EQUIPMENT LOCATIONS WITH MECHANICAL, ARCHITECTURAL, AND STRUCTURAL DRAWINGS PRIOR TO INSTALLATION.
- RECTANGULAR ELBOWS SHALL BE LONG-RADIUS ELBOWS UNLESS OTHERWISE SHOWN OR NOTED. SUPPLY AIR STANDARD NON-RADIUS 90° ELBOWS SHALL HAVE TURNING VANES.

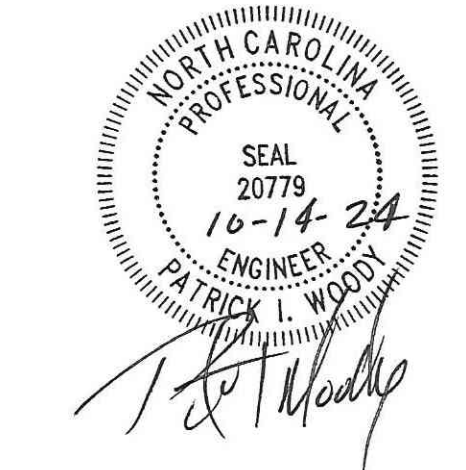
PREPARED FOR:



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△ Date Description



Seal / Signature

Project Name
WHATABURGER GASTONIA, NC

Date: 10.14.2024

Project Number
2302548

Description
GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

Scale
NOT TO SCALE

M0.1

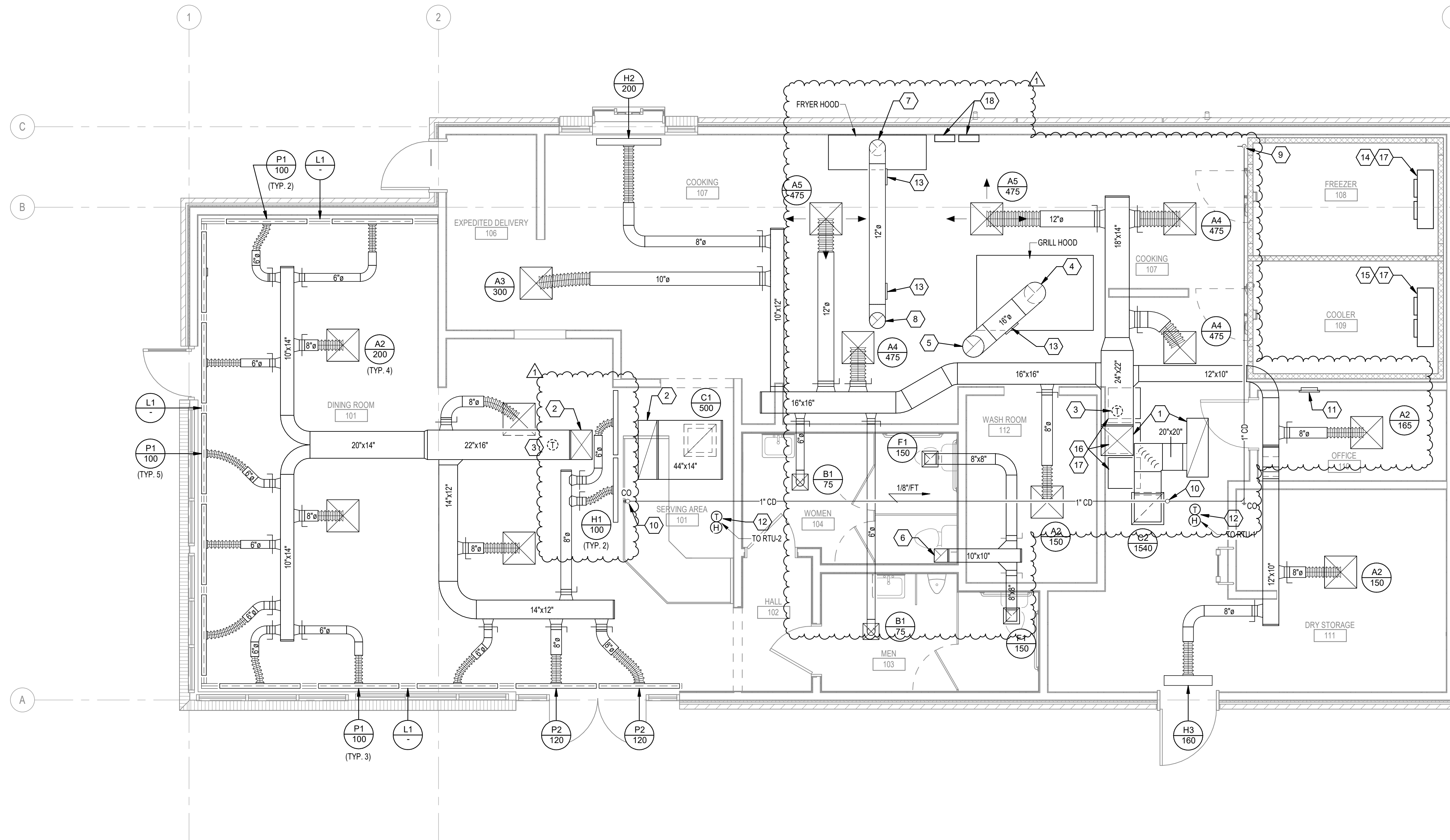
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MECHANICAL KEY NOTES

- 1 24"x22" SUPPLY DUCT AND 44"x16" RETURN DUCT UP TO RTU-1. PROVIDE DUCT TRANSITIONS TO MATCH UNIT CONNECTION SIZE.
- 2 22"x16" SUPPLY DUCT AND 44"x14" RETURN DUCT UP TO RTU-2. PROVIDE DUCT TRANSITIONS TO MATCH UNIT CONNECTION SIZE.
- 3 SUPPLY AIR DUCT MOUNTED TEMPERATURE SENSOR. INSTALL ON BOTTOM OF DUCT.
- 4 CONNECT KITCHEN EXHAUST HOOD ABOVE GRILL UP TO KEF-1 WITH 18" DIA. PRE-FABRICATED UL 1978 LISTED ANULATED GREASE DUCT, DURABLE INSULATION AND TRANSITION ABOVE CEILING TO MATCH HOOD CONNECTION SIZE. CONNECT TO HOOD VIA MANUFACTURER'S UL METHOD FOR GREASE AND SMOKE TIGHT JOINT. INSTALL ACCORDING TO MANUFACTURER'S DIRECTIONS FOR NFPA 96 COMPLIANCE.
- 5 18" GREASE EXHAUST DUCT UP TO KEF-1 ON ROOF. RE: A2MS.1
- 6 10"x10" EXHAUST DUCT UP TO EF-1 ON ROOF. RE: A1MS.1
- 7 CONNECT KITCHEN EXHAUST HOOD ABOVE FRYER UP TO KEF-2 WITH 12" DIA. PRE-FABRICATED UL 1978 LISTED ANULATED GREASE DUCT, DURABLE INSULATION AND TRANSITION ABOVE CEILING TO MATCH HOOD CONNECTION SIZE. CONNECT TO HOOD VIA MANUFACTURER'S UL METHOD FOR GREASE AND SMOKE TIGHT JOINT. INSTALL ACCORDING TO MANUFACTURER'S DIRECTIONS FOR NFPA 96 COMPLIANCE.
- 8 12" GREASE EXHAUST DUCT UP TO KEF-2 ON ROOF. RE: A2MS.1
- 9 1" CONDENSATE DOWN TO FLOOR. TERMINATE CONDENSATE AT FLOOR SINK WITH 1" AIR GAP.
- 10 FULLY INSULATED 1" COPPER CONDENSATE PIPE UP THROUGH ROOF. RE: CA1MS.1
- 11 THE PILOT RDM SYSTEM CONTROLLER PANEL SHALL BE MOUNTED AND INSTALLED FLUSH IN THE MANAGERS OFFICE AT 5' AFF. TO CENTER. COORDINATE FINAL LOCATION OF PANEL WITH OWNER AND GC.
- 12 TEMPERATURE AND HUMIDITY SENSORS "T" AND "H" TO BE CEILING MOUNTED AND TIED INTO THE BUILDING CONTROL SYSTEM.
- 13 LISTED GREASE DUCT ACCESS DOOR ASSEMBLY (DIS1-0A0L28 OR EQUAL). INSTALL ON SIDE OF DUCT.
- 14 KITCHEN FREEZER EVAPORATOR UNIT. FURNISHED BY OWNER, INSTALLED BY MC IN COORDINATION WITH GC.
- 15 KITCHEN COOLER EVAPORATOR UNIT. FURNISHED BY OWNER, INSTALLED BY MC IN COORDINATION WITH GC.
- 16 KITCHEN ICEMAKER EVAPORATOR UNIT. FURNISHED BY OWNER, INSTALLED BY MC IN COORDINATION WITH GC.
- 17 MECHANICAL CONTRACTOR TO PROVIDE EQUIPMENT SUPPORTS, REFRIGERANT LINES, AND COMPLETE EQUIPMENT INSTALLATION. COORDINATE EXACT LOCATION OF EQUIPMENT ON-SITE AND ROUTE REFRIGERANT PIPING THROUGH ROOF PENETRATION. COORDINATE PIPING AND UNIT INSTALLATION REQUIREMENTS AND STARTUP WITH KITCHEN EQUIPMENT MANUFACTURER AND GC.
- 18 REMOTE ANSUL SYSTEM MOUNTED ON WALL. CONFIRM FINAL LOCATION OF STATION WITH OWNER, ARCHITECT, AND OTHER TRADES. REFER TO DETAILS AND SPECIFICATIONS.

MECHANICAL GENERAL NOTES

- A. REFER TO M0.1 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.
- B. SMOKE DETECTORS SHALL BE PROVIDED AND INSTALLED BY THE RTU MANUFACTURER IN THE SUPPLY AND RETURN SIDES OF RTU. COORDINATE INSTALLATION AND CONNECTION OF SMOKE DETECTORS WITH FA CONTRACTOR, EC, AND GC. REFERENCE M0.1 FOR RTU SCHEDULE ACTIVATION OF SMOKE DETECTORS SHALL SHUT DOWN RTU AND ACTIVATE THE AUDIBLE AND VISUAL SIGNAL PROVIDED.
- C. PROVIDE NECESSARY ACCESS AND CLEARANCES AROUND ALL EQUIPMENT ACCORDING TO MANUFACTURER'S RECOMMENDATION.
- D. MAINTAIN A MINIMUM DISTANCE OF 10'-0" BETWEEN ALL ROOF MOUNTED EQUIPMENT AND EDGE OF ROOF WITH THE EXCEPTION OF EQUIPMENT LOCATED BEHIND AN ARCHITECTURAL GUARD (MINIMUM 42" HIGH) OR PROVIDED WITH AN APPROVED FALL ARREST ANCHORAGE CONNECTOR DEVICE.
- E. MAINTAIN A MINIMUM DISTANCE OF 10'-0" BETWEEN MECHANICAL AIR INTAKES AND ALL MECHANICAL EXHAUSTS OR PLUMBING VENTS.
- F. AN APPROVED AGENCY SHALL BE HIRED BY THE OWNER AS PART OF THIS PROJECT TO PROVIDE A COMMISSIONING PLAN THAT INCLUDES THE FOLLOWING ITEMS:
- A NARRATIVE DESCRIPTION OF THE ACTIVITIES THAT WILL BE ACCOMPLISHED DURING EACH PHASE OF COMMISSIONING, INCLUDING THE PERSONNEL INTENDED TO ACCOMPLISH EACH OF THE ACTIVITIES.
 - A LISTING OF THE SPECIFIC EQUIPMENT, APPLIANCES OR SYSTEMS TO BE TESTED AND A DESCRIPTION OF THE TESTS TO BE PERFORMED.
 - FUNCTIONS TO BE TESTED INCLUDING, BUT NOT LIMITED TO, CALIBRATIONS AND ECONOMIZER CONTROLS.
 - CONDITIONS UNDER WHICH THE TEST WILL BE PERFORMED. TESTING SHALL AFFIRM WINTER AND SUMMER DESIGN CONDITIONS AND FULL OUTSIDE AIR CONDITIONS.
 - MEASURABLE CRITERIA FOR PERFORMANCE.
- G. KITCHEN HOODS, ANSUL FIRE SUPPRESSION SYSTEM AND HOOD CONTROLS SHALL BE OWNER-FURNISHED AND CONTRACTOR-INSTALLED. COORDINATE WITH GC.
- H. FINAL LOCATION OF ALL TEMPERATURE AND HUMIDITY SENSORS TO BE COORDINATED IN FIELD. LOCATE SENSORS SUCH THAT THEY ARE ACCESSIBLE, PROTECTED, AND IN AN AREA OF UNOBSTRUCTED AIR CIRCULATION.
- I. ALL TESTS AND BALANCES TO BE PERFORMED BY A THIRD PARTY - NOT BY MEP SUBCONTRACTOR.
- J. PRIOR TO BEGINNING WORK, COORDINATE COMPLETE INSTALLATION OF ALL ROOFTOP EQUIPMENT AND ACCESSORIES WITH GC AND OTHER TRADES.



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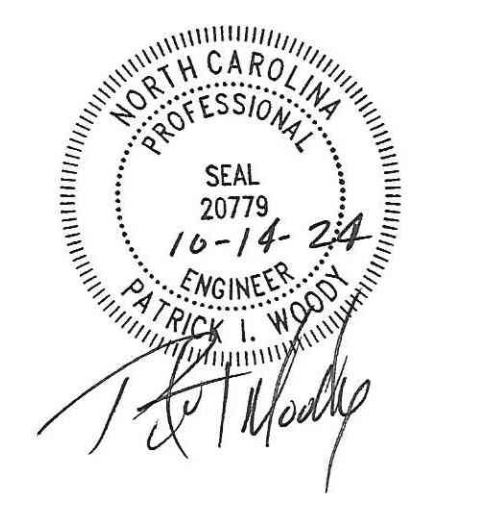
Whataburger

BL Companies Architecture
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△	Date	Description
1	10/14/24	PROTOTYPE UPDATE



Seal / Signature

Project Name
WHATABURGER GASTONIA, NC

Date: 10.14.2024

Project Number
2302548

Description
MECHANICAL FLOOR PLAN

Scale
1/4" = 1'-0" Ref North

M1.1

M1 MECHANICAL FLOOR PLAN - LEVEL 1
1/4" = 1'-0"

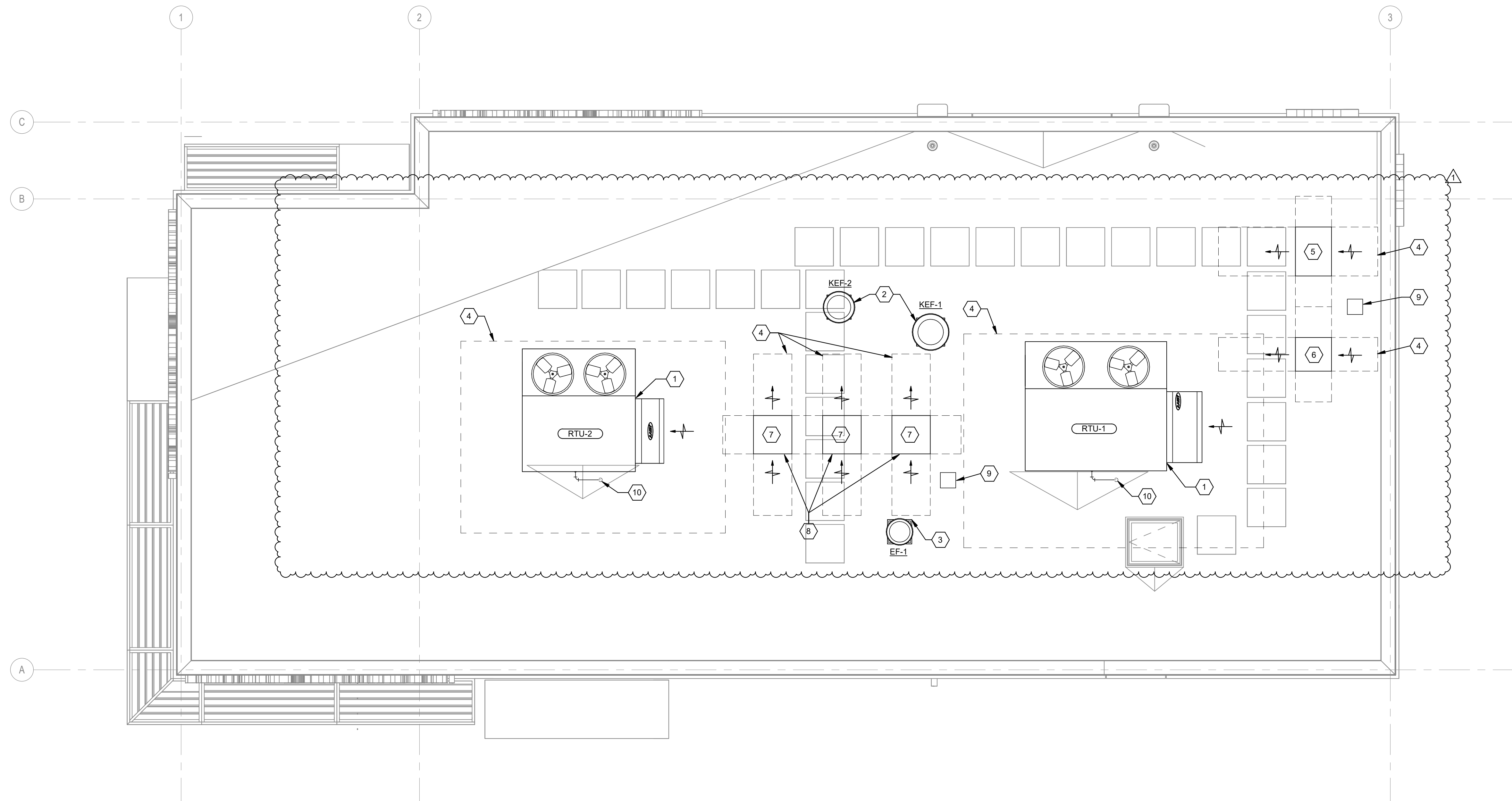
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MECHANICAL KEY NOTES

- 1 ROOFTOP HVAC UNIT MOUNTED ON PRE-FABRICATED CURB, RE: C3M5.1
- 2 CENTRIFUGAL UPBLAST GREASE HOOD EXHAUST FAN MOUNTED ON MANUFACTURER PROVIDED ROOF CURB, RE: A2M5.1
- 3 CENTRIFUGAL DOWNBLAST EXHAUST FAN MOUNTED ON MANUFACTURER PROVIDED ROOF CURB, RE: A1M5.1
- 4 REQUIRED UNIT CLEARANCE PER BOB MANUFACTURER. COORDINATE EXACT CLEARANCE REQUIREMENTS WITH INSTALLED EQUIPMENT
- 5 KITCHEN FREEZER CONDENSING UNIT MOUNTED ON ROOFTOP. FURNISHED BY OWNER. INSTALLED BY MC IN COORDINATION WITH GC. PROVIDE R404A REFRIGERANT, 3/8" LIQUID LINE AND 7/8" SUCTION LINE BETWEEN INDOOR AND OUTDOOR UNIT PER EQUIPMENT MFR.
- 6 KITCHEN COOLER CONDENSING UNIT MOUNTED ON ROOFTOP. FURNISHED BY OWNER. INSTALLED BY MC IN COORDINATION WITH GC. PROVIDE R404A REFRIGERANT, 3/8" LIQUID LINE AND 5/8" SUCTION LINE BETWEEN INDOOR AND OUTDOOR UNIT PER EQUIPMENT MFR.
- 7 KITCHEN ICEMAKER CONDENSING UNIT MOUNTED ON ROOFTOP. FURNISHED BY OWNER. INSTALLED BY MC IN COORDINATION WITH GC. PROVIDE R404A REFRIGERANT, 3/8" LIQUID LINE AND 7/8" SUCTION LINE BETWEEN INDOOR AND OUTDOOR UNIT PER EQUIPMENT MFR.
- 8 MECHANICAL CONTRACTOR TO PROVIDE EQUIPMENT SUPPORTS, REFRIGERANT LINES, AND COMPLETE EQUIPMENT INSTALLATION. COORDINATE EXACT LOCATION OF EQUIPMENT ON-SITE AND ROUTE REFRIGERANT PIPING THROUGH ROOF PENETRATION. COORDINATE PIPING AND UNIT INSTALLATION REQUIREMENTS AND STARTUP WITH KITCHEN EQUIPMENT MANUFACTURER AND GC.
- 9 REFRIGERATION PIPING ROOF PENETRATION, RE: C4M5.1
- 10 ROUTE CONDENSATE LINE DOWN THROUGH ROOF. RE: A1M1.1 FOR CONTINUATION AND RE: C4M5.1 FOR DETAIL.

MECHANICAL GENERAL NOTES

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- C. PROVIDE NECESSARY ACCESS AND CLEARANCES AROUND ALL EQUIPMENT ACCORDING TO MANUFACTURER'S RECOMMENDATION.
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- E. MAINTAIN A MINIMUM DISTANCE OF 10'-0" BETWEEN MECHANICAL AIR INTAKES AND ALL MECHANICAL EXHAUSTS OR PLUMBING VENTS.
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- G. KITCHEN HOODS, ANSUL FIRE SUPPRESSION SYSTEM AND HOOD CONTROLS SHALL BE OWNER-FURNISHED AND CONTRACTOR-INSTALLED. COORDINATE WITH GC.
- H. FINAL LOCATION OF ALL TEMPERATURE AND HUMIDITY SENSORS TO BE COORDINATED IN FIELD. LOCATE SENSORS SUCH THAT THEY ARE ACCESSIBLE, PROTECTED, AND IN AN AREA OF UNOBSTRUCTED AIR CIRCULATION.
- I. ALL TESTS AND BALANCES TO BE PERFORMED BY A THIRD PARTY - NOT BY MEP SUBCONTRACTOR.
- J. PRIOR TO BEGINNING WORK, COORDINATE COMPLETE INSTALLATION OF ALL ROOFTOP EQUIPMENT AND ACCESSORIES WITH GC AND OTHER TRADES.



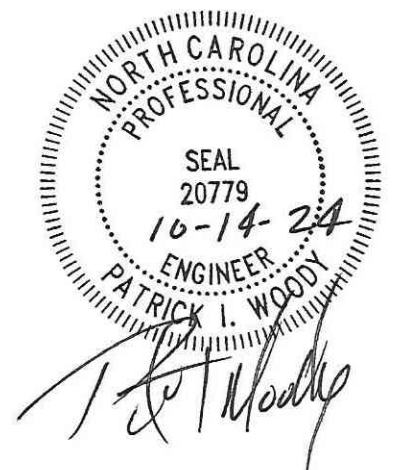
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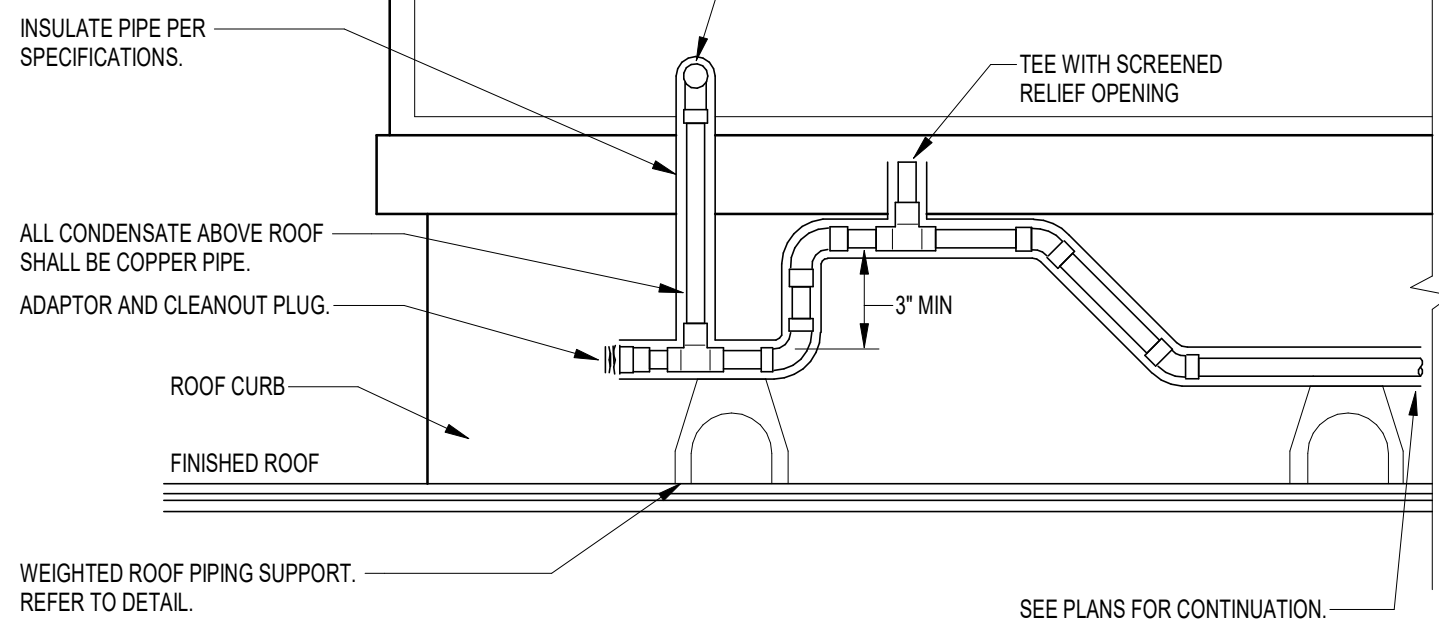
Scale
1/4" = 1'-0" Ref North

M2.1

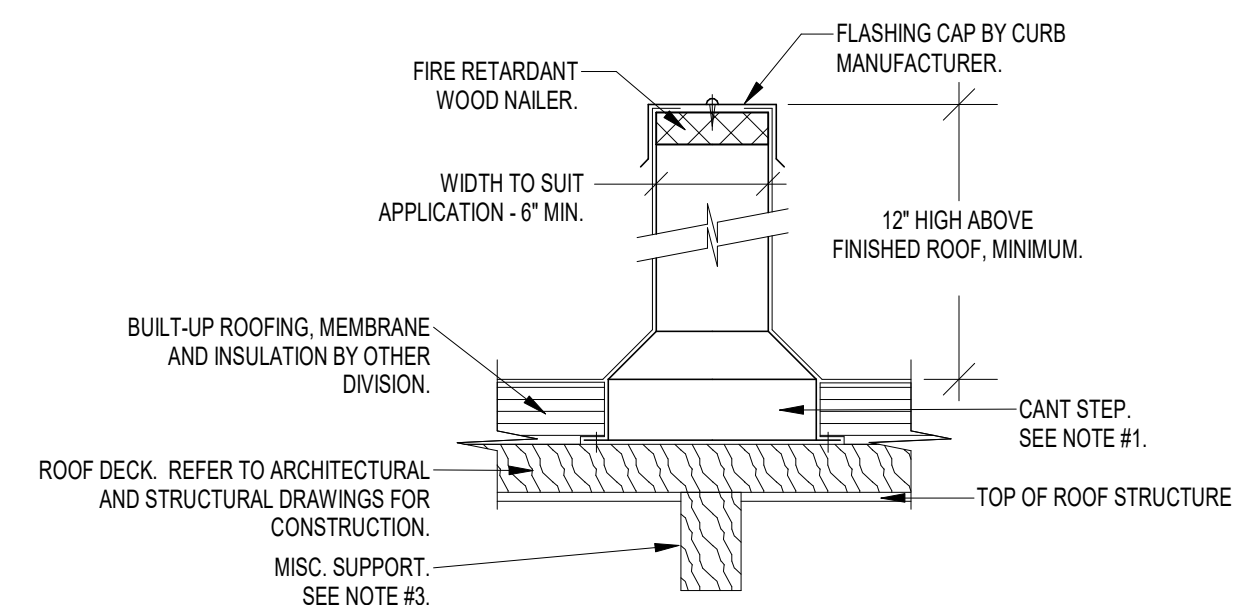
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M1 MECHANICAL ROOF PLAN
1/4" = 1'-0"

TONS	DRAIN SIZE
UP TO 40	1"
UP TO 90	1-1/4"
UP TO 125	1-1/2"

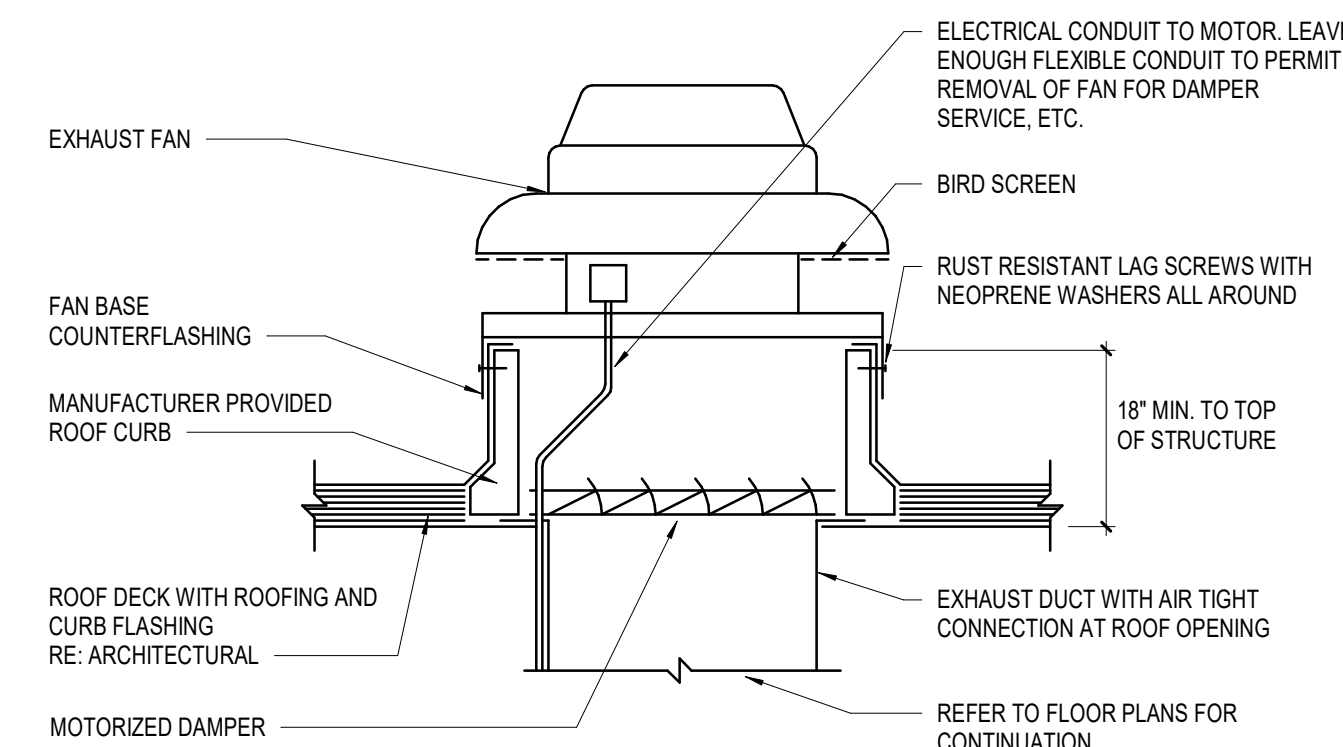


C1 RTU CONDENSATE DRAIN DETAIL
N.T.S.



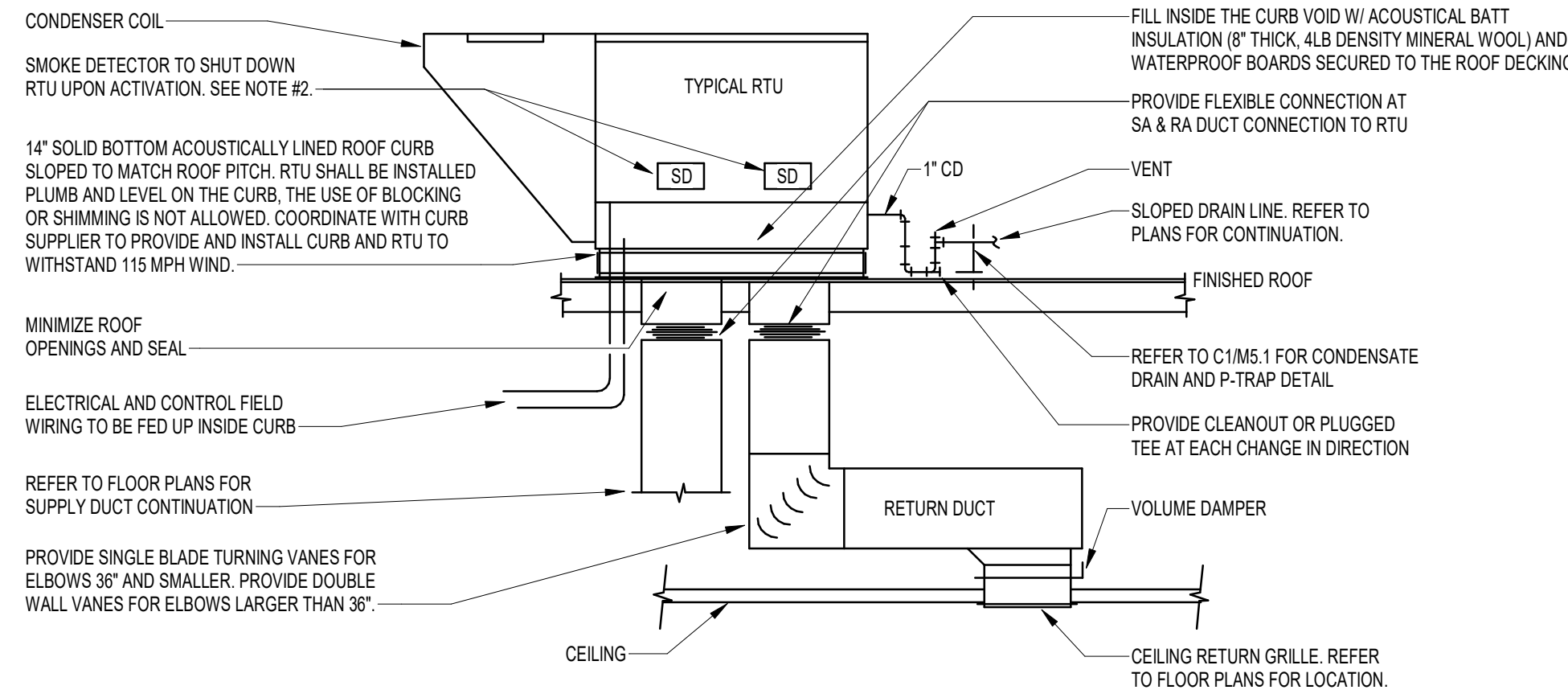
- NOTES:**
1. THE RAISED CANT STEP HEIGHT SHALL BE COORDINATED WITH THICKNESS OF ROOF INSULATION ON ARCHITECTURAL DRAWINGS AND WITH THE ROOFING CONTRACTOR. SECURE RAIL TO THE ROOF DECK WITH LOAD RATED, RUST RESISTANT FASTENERS.
 2. THE RAIL SHALL BE DESIGNED AND FABRICATED TO THOROUGHLY SUPPORT ITS RESPECTIVE COMPONENT. AS A MINIMUM, RAILS SHALL BE FABRICATED OF 18 GAUGE GALVANIZED STEEL WITH BUILT-UP CANT, MONOLITHIC CONSTRUCTION WITH INTEGRAL BASE PLATE AND CONTINUOUS MITERED AND WELDED CORNER SEAMS, WITH FACTORY INSTALLED FIRE RETARDANT WOOD NAILER. EACH RAIL SHALL INCLUDE A MATCHING 18 GAUGE GALVANIZED STEEL COUNTERFLASHING CAP WITH INTEGRAL DRIP EDGE. ALL CORNERS MITERED AND WELDED, AND SCREWS FOR ATTACHMENT. EQUIPMENT CURBS OVER 3 FEET LONG SHALL INCORPORATE 1/4" GAUGE INTERNAL GUSSET REINFORCING. SECURELY FASTEN TO ROOF DECK AND INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHEN THE UNIT IS TO BE INSTALLED ON A PITCHED ROOF, COORDINATE WITH THE RAIL MANUFACTURER TO PROVIDE A PITCHED RAIL TO MATCH THE PITCH OF THE ROOF. THE EQUIPMENT/PIPING/DUCTWORK SHALL BE INSTALLED LEVEL AND PLUMB.
 3. THE MECH. CONTRACTOR SHALL COORDINATE THE ORIENTATION OF THE EQUIP. RAILS TO SPAN A MINIMUM OF TWO ROOF BEAMS/JOISTS BELOW. PROVIDE MISC. FRAMING TO CONTINUOUSLY SUPPORT THE RAILS FROM BELOW.
 4. REFER TO THE KITCHEN EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR THE MOUNTING REQUIREMENTS TO DETERMINE THE FINAL LOCATION OF THE EQUIPMENT SUPPORT RAILS AND THEIR LENGTH. SECURE EQUIPMENT AS RECOMMENDED BY MANUFACTURER.

C2 ROOFTOP CONDENSING UNIT SUPPORT RAILS
N.T.S.



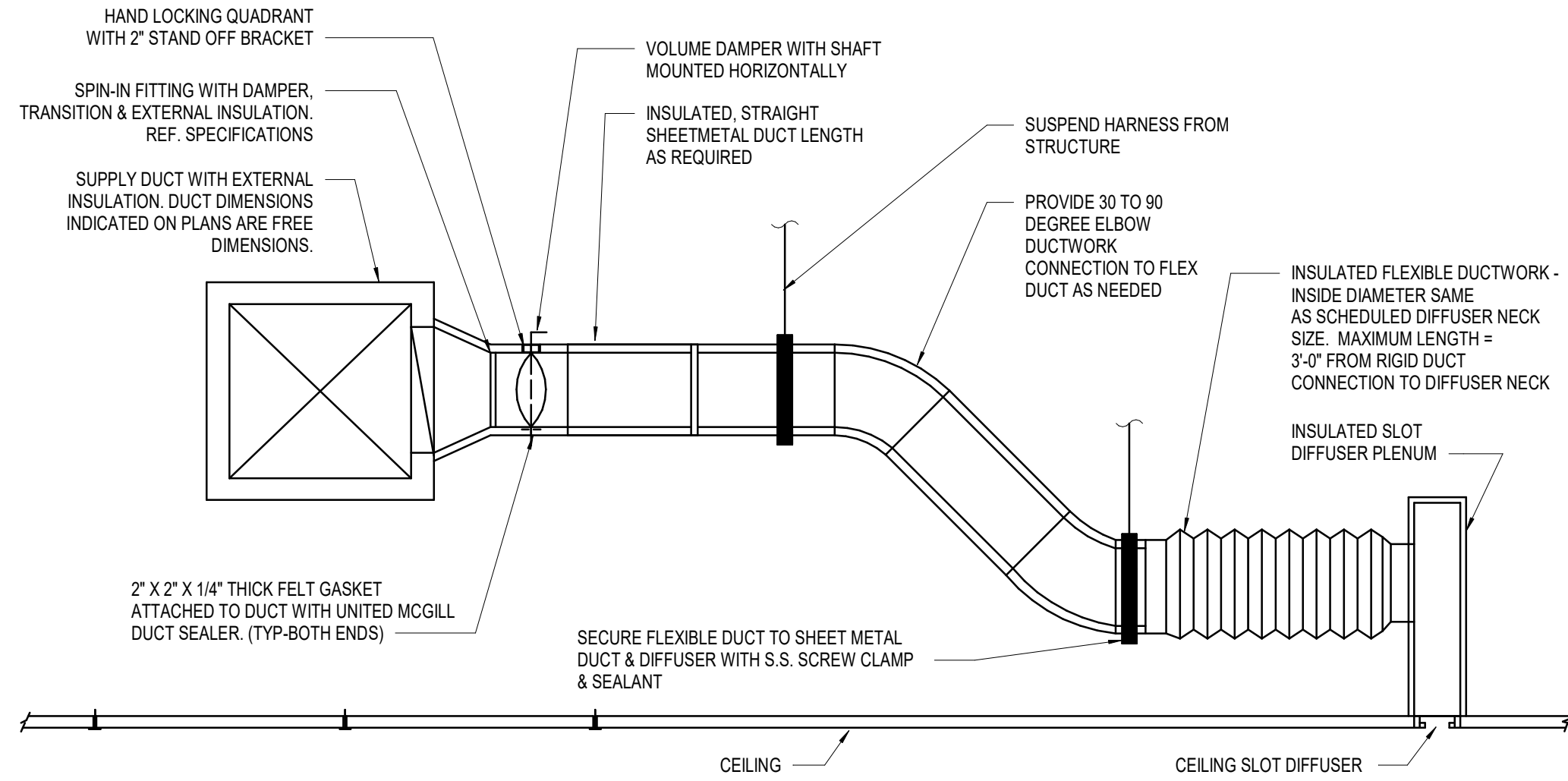
- NOTES:**
1. COORDINATE FINAL DIMENSIONS WITH ROOF INSTALLER.
 2. THE FAN SHALL BE MOUNTED PLUMB AND LEVEL ON THE ROOF CURB. THE USE OF BLOCKING OR SHIMMING UNDER THE ROOF CURB IS NOT ACCEPTABLE. THE MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE CURB MANUFACTURER TO COMPENSATE FOR ANY ROOF PITCH.
 3. PROVIDE ALL COMPONENTS REQUIRED TO INSTALL AND SECURE THE ROOF CURB AND EXHAUST FAN IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

A1 ROOF MOUNTED EXHAUST FAN AND CURB DETAIL
N.T.S.



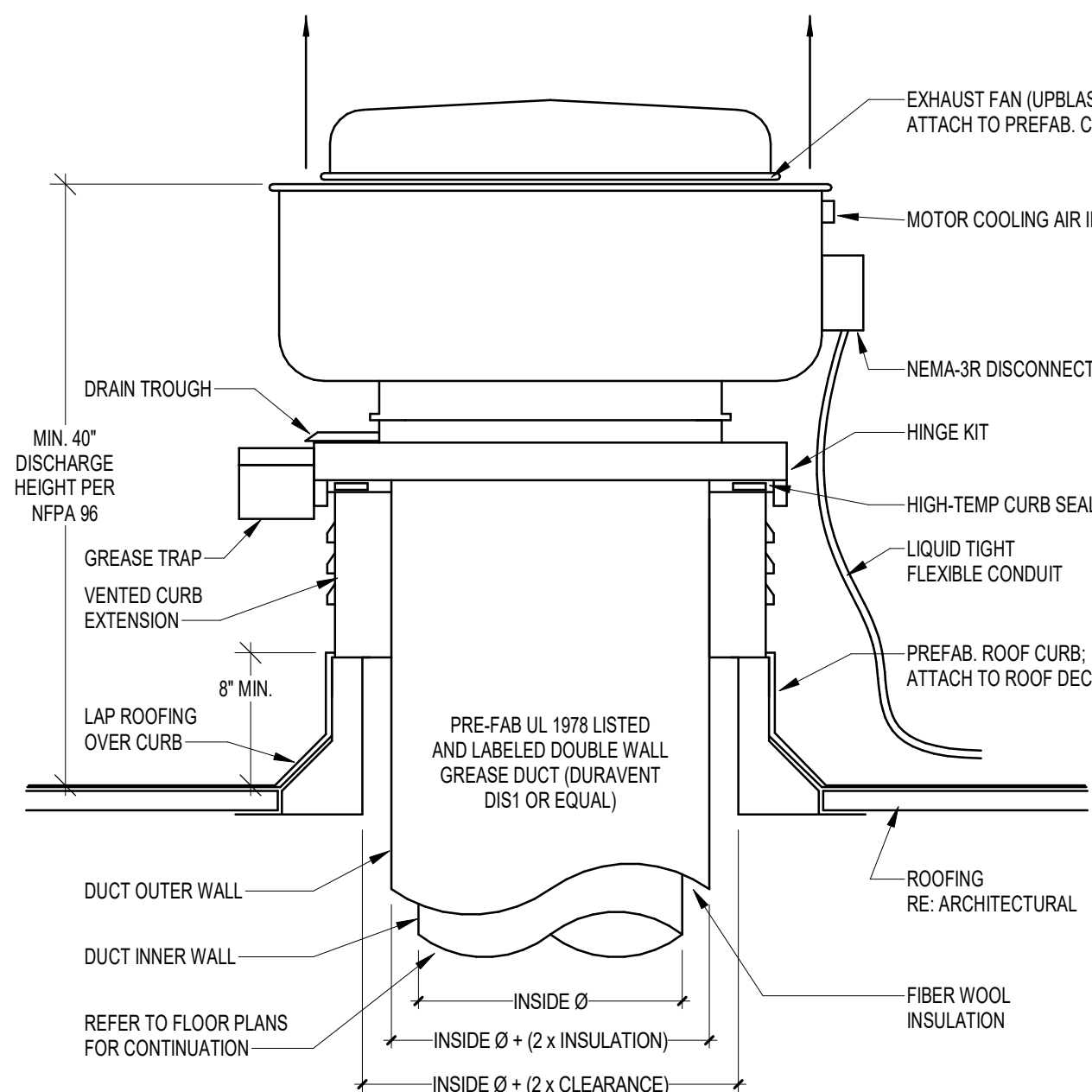
- NOTES:**
1. DIMENSIONS OF CURB DIFFER FROM DIMENSIONS OF UNIT DUE TO THE SLOPED CONDENSER COIL.
 2. SMOKE DETECTORS SHALL BE PROVIDED AND INSTALLED BY THE RTU MANUFACTURER IN THE SUPPLY AND RETURN SIDES OF RTU. COORDINATE INSTALLATION AND CONNECTION OF SMOKE DETECTORS WITH FA CONTRACTOR, EC, AND GC. REFERENCE M6.1 FOR RTU SCHEDULE. ACTIVATION OF SMOKE DETECTORS SHALL SHUT DOWN RTU AND ACTIVATE THE AUDIBLE AND VISUAL SIGNAL PROVIDED.

C3 ROOFTOP HVAC UNIT DETAIL
N.T.S.



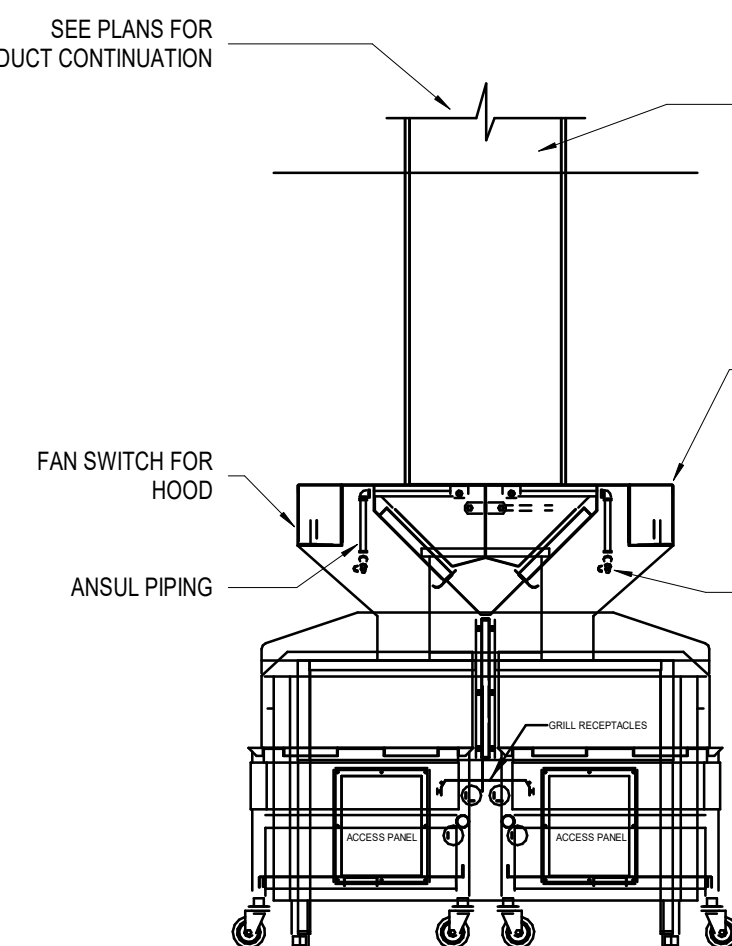
NOTE: INSTALL FLEXIBLE DUCTWORK SUPPORTS AT ALL ROUND NECK OUTLETS/INLETS UNLESS OTHERWISE NOTED ON DRAWINGS.

B1 PLENUM SLOT DIFFUSER DETAIL
N.T.S.

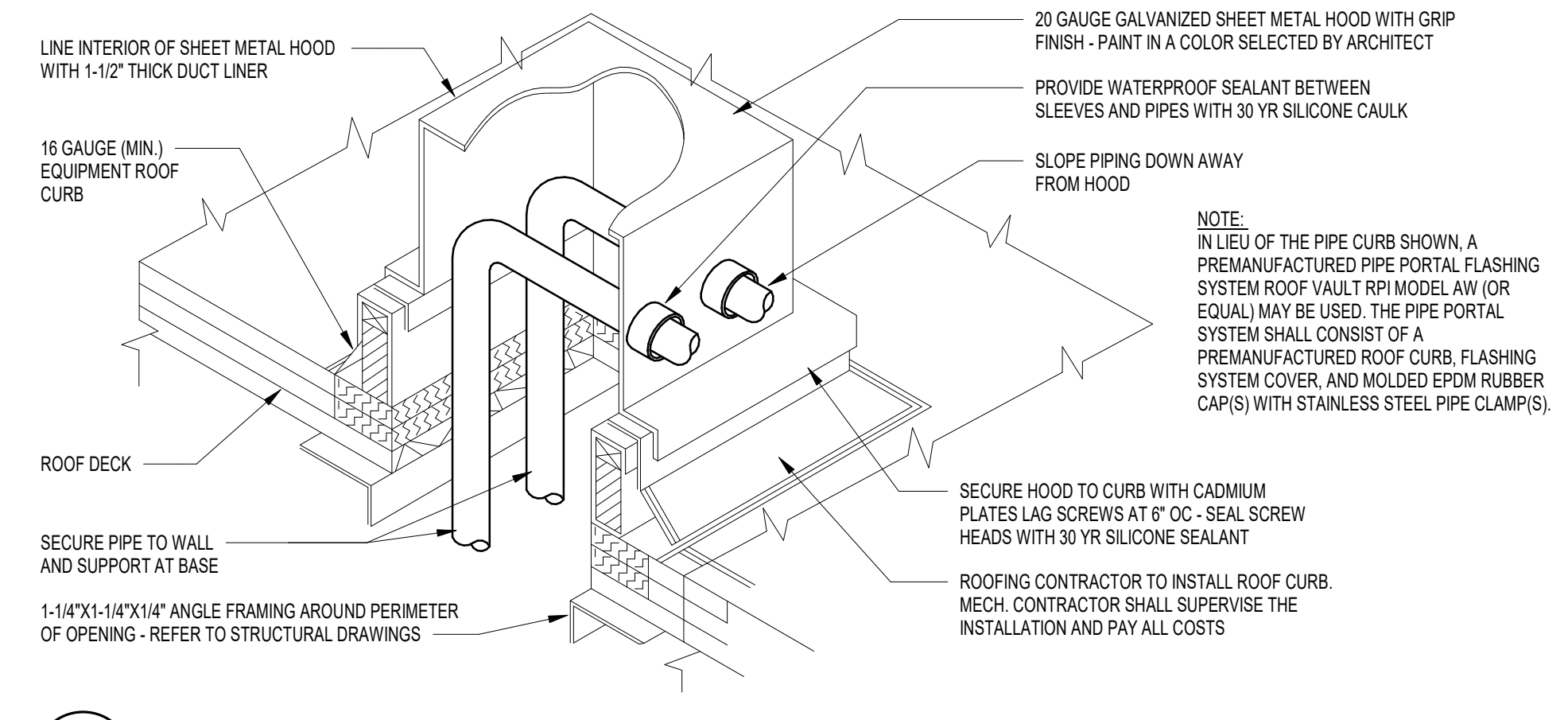


NOTE: ROOF OPENING DIMENSIONS BASED ON DUCT MANUFACTURER'S CLEARANCE REQUIREMENTS. MC TO PROVIDE FAN CURB WITH OPENING SIZE TO MEET GREASE DUCT CLEARANCE REQUIREMENTS.

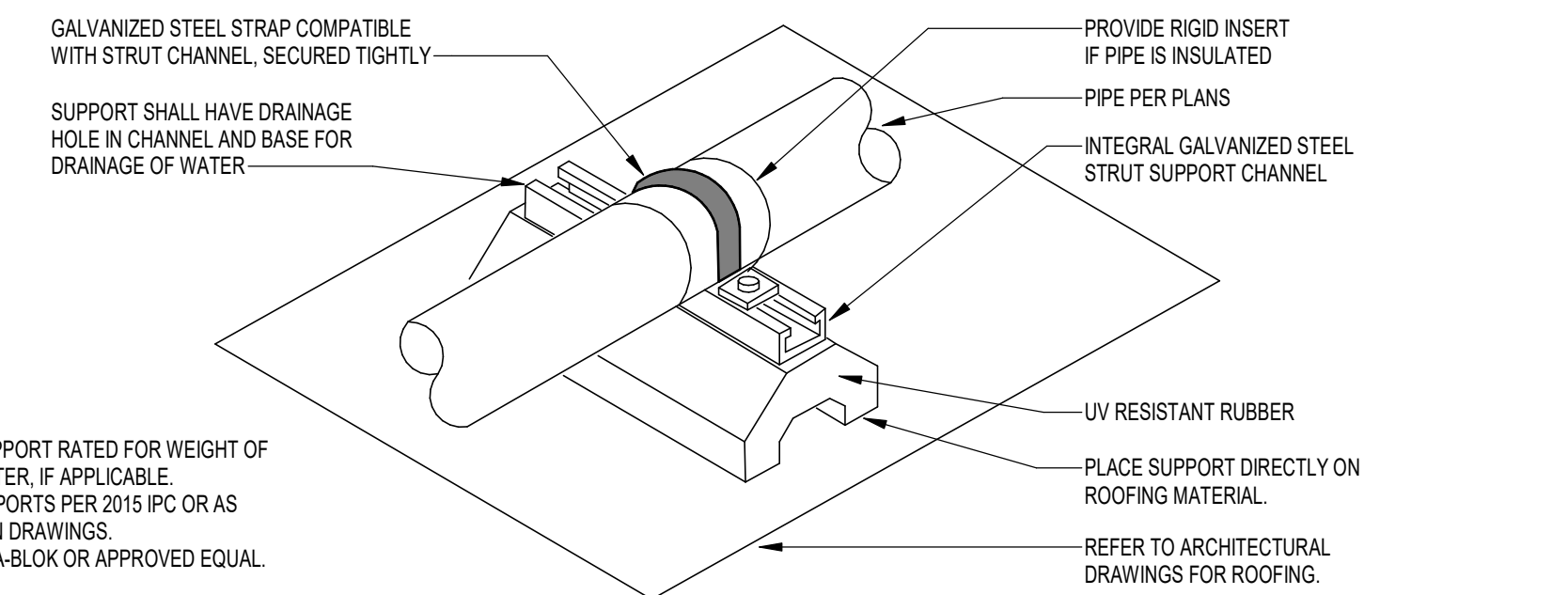
A2 ROOFTOP GREASE EXHAUST FAN DETAIL
N.T.S.



A3 LOW PROFILE HOOD DETAIL
N.T.S.

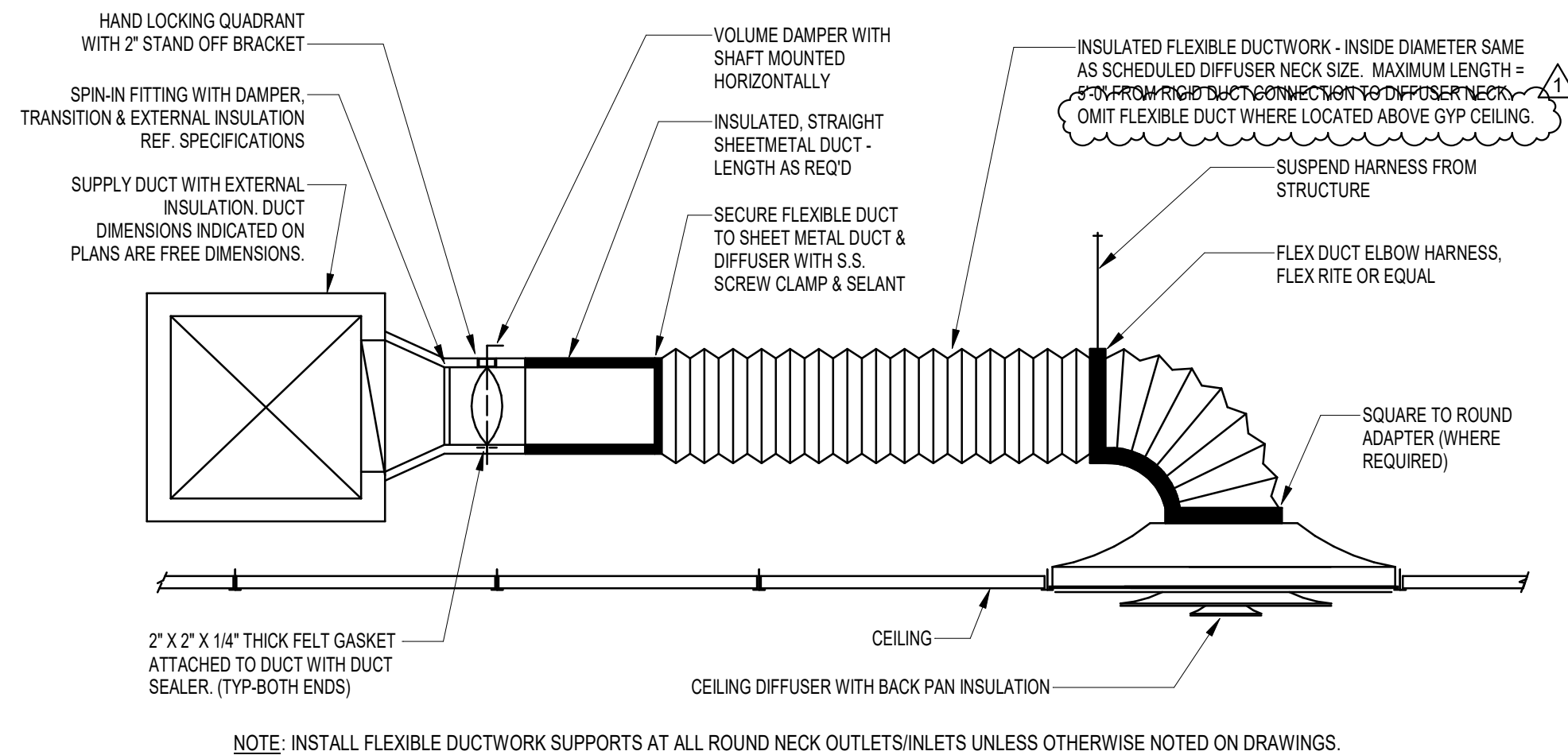


C4 PIPING THROUGH ROOF DETAIL
N.T.S.



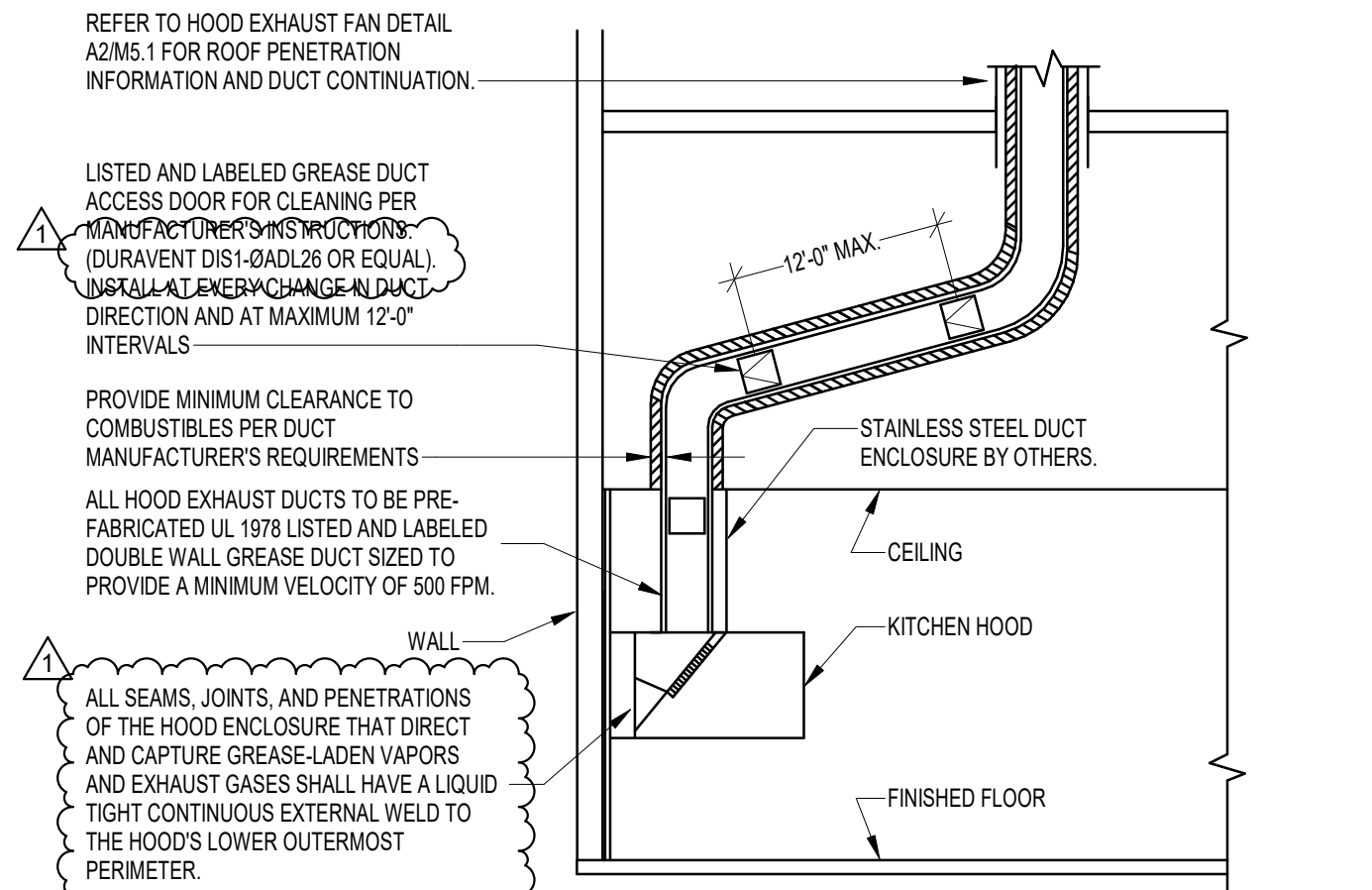
- NOTES:**
1. SELECT SUPPORT RATED FOR WEIGHT OF PIPE AND WATER, IF APPLICABLE.
 2. SPACE SUPPORTS PER 2015 IPC OR AS INDICATED ON DRAWINGS.
 3. B-LINE DURA-BLOK OR APPROVED EQUAL.

C5 ROOFTOP PIPE SUPPORT DETAIL
N.T.S.



NOTE: INSTALL FLEXIBLE DUCTWORK SUPPORTS AT ALL ROUND NECK OUTLETS/INLETS UNLESS OTHERWISE NOTED ON DRAWINGS.

B2 DIFFUSER CONNECTION DETAIL
N.T.S.



A4 HOOD EXHAUST DUCT DETAIL
N.T.S.

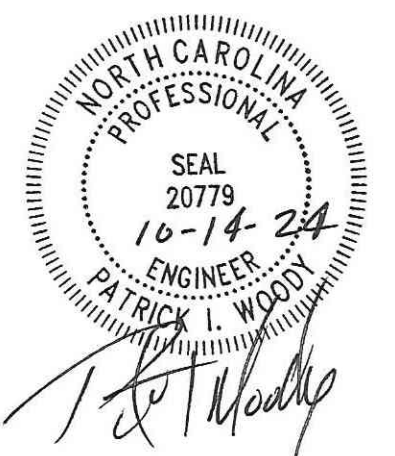
PREPARED FOR:



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Date	Description
10/14/24	PROTOTYPE UPDATE



Seal / Signature

Project Name

WHATABURGER GASTONIA, NC

Date: 10.14.2024

Project Number

2302548

Description

MECHANICAL DETAILS

Scale

NOT TO SCALE

M5.1

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ROOFTOP UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	AREA SERVED	OA CFM	SUPPLY FAN				COOLING SECTION					HOT GAS REHEAT (MBH)	HEATING SECTION					ELECTRICAL				FILTER TYPE	WEIGHT (LBS)	NOTES						
					CFM	ESP (\"WG)	RPM	HP	TYPE	REFRIG. TYPE	AMBIENT (\"F) DB/WB	TOTAL OUTPUT (MBH)	SENS. OUTPUT (MBH)		MAT (\"F) DB/WB	LAT (\"F) DB/WB	EER / IEER	TYPE	AMBIENT (\"F) DB/WB	INPUT (MBH)	OUTPUT (MBH)	STAGES	GAS PRESS. MIN / MAX (\" WC)				MAT (\"F) DB/WB	LAT (\"F) DB/WB	VOLTS	PH	MCA	MOP
RTU-1	AAON	RNA-018-CA-8-FAB04-CB1K0	KITCHEN	2110	3650	0.75	1008	3.0	DX	R-454B	94.6/77.4	209.5	122.5	85.9/71.9	54.3/53.5	12.3/18.8	70.3	NAT. GAS	20.6/20.0	270.0	218.7	3:1	3.5/10.5	43.6/41.3	100.6/64.4	208	3	86	110	2\" MERV 8	2695	ALL
RTU-2	AAON	RNA-013-BA-8-FAB04-CB1K0	DINING	1740	2240	0.75	1325	2.0	DX	R-454B	94.6/77.4	158.6	87.8	90.2/74.6	52.6/52.0	12.7/17.2	46.1	NAT. GAS	20.6/20.0	195.0	156.0	3:1	3.5/10.5	32.0/31.2	99.3/81.7	208	3	75	90	2\" MERV 8	2112	ALL

- NOTES:
- PROVIDE WITH PREMIUM EFFICIENCY MOTORS IN ACCORDANCE WITH NEMA MG-1.
 - PROVIDE WITH FACTORY INSTALLED SUPPLY AND RETURN SMOKE DETECTORS TO SHUT DOWN UNIT UPON SMOKE DETECTION. COORDINATE CONNECTION TO FIRE ALARM SYSTEM WITH FA CONTRACTOR AND GC.
 - PROVIDE WITH TERMINAL STRIP FOR FIELD INSTALLED CONTROLS.
 - UNITS TO BE 2\" DOUBLE WALL R-13 CONSTRUCTION WITH 2500-HOUR SALT SPRAY RESISTANT PAINT.
 - UNIT TO HAVE MODULATING HOT GAS REHEAT AND MODULATE HEAT CONTROL. MECHANICAL CONTRACTOR RESPONSIBLE FOR INSTALLING (2) FACTORY PROVIDED SUPPLY AIR TEMPERATURE SENSORS.
 - PROVIDE FACTORY INSTALLED HAIL GUARDS.
 - PROVIDE 6-ROW DX COIL AND STAINLESS STEEL DRAIN PAN.
 - PROVIDE FACTORY MOUNTED AND WIRED CONDENSATE FLOW SWITCH.
 - PROVIDE ULTRA-LOW LEAKAGE ECONOMIZER WITH BAROMETRIC RELIEF DAMPER, AND FAULT DETECTION AND DIAGNOSTIC.
 - PROVIDE STAINLESS STEEL GAS HEAT EXCHANGER WITH MODULATING CONTROL.
 - PROVIDE FACTORY POWERED GFCI CONVENIENCE OUTLET AND NON-FUSED DISCONNECT.
 - PROVIDE 14\" HIGH INSULATED, SOLID BOTTOM CURB FOR PITCHED ROOF. MECHANICAL CONTRACTOR TO FIELD CUT SUPPLY AND RETURN OPENINGS AS REQUIRED.
 - AAON UNITS PROVIDED BY WHATABURGER. FACTORY STARTUP IS INCLUDED. CONTACT AARON HUMPHRIES @ 210-954-6657 OR aaron.humphries@texasairsystems.com TO COORDINATE STARTUP.

FLEX DUCT SCHEDULE

CFM RANGE	SIZE (DIAMETER)
< 50	5
51 - 100	6
101 - 250	8
251 - 400	10
401 - 650	12
651 - 900	14
901 - 1300	16
1301 - 1800	18
1800 - 2300	20

- NOTES:
- ALL FLEX DUCT SHALL BE SIZED IN ACCORDANCE WITH FLEX DUCT SCHEDULE. PROVIDE RIGID REDUCER AT NECK OF AIR DEVICE TO TRANSITION FROM FLEX DUCT SIZE TO DIFFUSER INLET CONNECTION SIZE. FLEX DUCT LENGTH NOT TO EXCEED 5 FT.

EXHAUST FAN SCHEDULE

MARK	MANUFACTURER	MODEL	TYPE	AIRFLOW (CFM)	TSP (\"WG)	RPM	BHP	HP	DRIVE TYPE	VOLTS	PH	WEIGHT (LBS.)	NOTES
EF-1	GREENHECK	G-080-VG	ROOF-MOUNTED CENTRIFUGAL DOWNBLAST	300	0.50	1680	0.07	0.10	DIRECT	120	1	44	1,2,3
KEF-1	GREENHECK	CUE-140-VG	ROOF-MOUNTED CENTRIFUGAL UPBLAST	1994	1.00	1517	0.64	1.00	DIRECT	208	1	135	3,4,5,6
KEF-2	GREENHECK	CUE-120-VG	ROOF-MOUNTED CENTRIFUGAL UPBLAST	1216	0.75	1415	0.25	0.50	DIRECT	208	1	111	3,4,5,6

- NOTES:
- PROVIDE INSULATED 18\" HIGH ROOF CURB WITH DAMPER TRAY AND MOTORIZED DAMPER WITH END SWITCHES AND SPRING RETURN ACTUATOR.
 - PROVIDE ALUMINUM BIRD SCREEN.
 - PROVIDE WITH INTEGRAL DISCONNECT SWITCH NEMA-3R.
 - PROVIDE GREASE BOX.
 - PROVIDE INSULATED AND VENTED 24\" HIGH ROOF CURB AND HIGH TEMPERATURE CURB SEAL.
 - PROVIDE HINGED ACCESS KIT.

AIR DEVICE SCHEDULE

MARK	MANUFACTURER	MODEL	FACE SIZE (IN.)	NECK SIZE (IN.)	MAX NC	PATTERN	MOUNTING	SLOT LENGTH	SLOT WIDTH	SLOT QTY	SYSTEM CLASS.	COMMENTS
A2	TITUS	TMS	24x24	8	30	4-WAY	LAY-IN	-	-	-	SUPPLY AIR	1
A3	TITUS	TMS	24x24	10	30	4-WAY	LAY-IN	-	-	-	SUPPLY AIR	1
A4	TITUS	TMS	24x24	12	30	4-WAY	LAY-IN	-	-	-	SUPPLY AIR	1
A5	TITUS	TMS	24x24	12	30	3-WAY	LAY-IN	-	-	-	SUPPLY AIR	1
B1	TITUS	TMS	12x12	6	30	4-WAY	FLANGE	-	-	-	SUPPLY AIR	1,2
C1	TITUS	350FL1	22x22	18x18	30	-	FLANGE	-	-	-	RETURN AIR	2,5
C2	TITUS	350FL1	24x24	20x20	30	-	LAY-IN	-	-	-	RETURN AIR	5
F1	TITUS	50F	12x12	8x8	30	-	FLANGE	-	-	-	EXHAUST AIR	2
H1	TITUS	TBD0-30	48x1-3/4	6	30	2-WAY	FLANGE	48	3/4	1	SUPPLY AIR	2,3
H2	TITUS	TBD0-80	48x5	8	30	2-WAY	FLANGE	48	1-1/2	2	SUPPLY AIR	3
H3	TITUS	TBD0-80	36x7-1/2	8	30	2-WAY	FLANGE	36	1-1/2	3	SUPPLY AIR	3
L1	TITUS	FL-15-JT	SEE PLANS	-	30	1-WAY	FLANGE	CONTINUOUS	1-1/2	1	SUPPLY AIR	4
P1	TITUS	FBPI	60x3-1/2	6	30	-	FLANGE	60	-	-	SUPPLY AIR	3
P2	TITUS	FBPI	60x3-1/2	8	30	-	FLANGE	60	-	-	SUPPLY AIR	3

- NOTES:
- PROVIDE MOLDED INSULATION BLANKET (R-6).
 - PROVIDE PLASTER FRAME FOR MOUNTING IN GYP. CEILING.
 - PROVIDE INSULATED PLENUM.
 - CONTINUOUS ENERGY RATED DIFFUSER TO BE INSTALLED IN GYP. CEILING. PROVIDE INSULATED SUPPLY AIR PLENUMS AS SCHEDULED FOR A COMPLETE SYSTEM. PROVIDE BLANK-OFFS FOR UNUSED PORTIONS OF DIFFUSER.
 - PROVIDE 1\" MERV-5 FILTER.

AIR BALANCE AND VENTILATION CALCULATION:

TOTAL OUTSIDE AIR INTAKE = 3850 CFM
 TOTAL GREASE HOOD EXHAUST = 3210 CFM
 TOTAL RESTROOM EXHAUST = 300 CFM

OUTSIDE AIRFLOW - (GREASE HOOD EXHAUST AIRFLOW + RESTROOM EXHAUST AIRFLOW) = NET POSITIVE AIRFLOW
 3850 CFM - (3210 + 300) = 340 CFM

BALANCE REPORT TO BE PROVIDED TO INSPECTOR, OWNER, AND ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.

VENTILATION CALCULATION PER IMC 2015, TABLE 403.3.1.1:

HVAC UNIT	AREA SERVED	CLASSIFICATION	OCCUPANT LOAD	REQUIRED VENTILATION	O.A./E.A. REQUIRED (CFM)	O.A./E.A. DESIGN (CFM)	REMARKS
RTU-1	EXPEDITED DELIVERY 106	KITCHENS (COOKING)	1 (69 SQFT)	7.5 CFM / PERSON 0.12 CFM / SQFT	16	173	
	COOKING 107	KITCHENS (COOKING)	14 (699 SQFT)	7.5 CFM / PERSON 0.12 CFM / SQFT	189	1532	
	OFFICE 110	OFFICE SPACES	1 (63 SQFT)	5 CFM / PERSON 0.06 CFM / SQFT	9	52	
	DRY STORAGE 111	STORAGE ROOMS	0 (339 SQFT)	0 CFM / PERSON 0.12 CFM / SQFT	41	179	
	WASH ROOM 112	KITCHENS (COOKING)	2 (95 SQFT)	7.5 CFM / PERSON 0.12 CFM / SQFT	27	87	
RTU-2	MEN 103 / WOMEN 104	TOILET ROOMS (PUBLIC)	0 (195 SQFT)	0 CFM / PERSON 0 CFM / SQFT	0	87	
	CALCULATED OUTSIDE AIR FOR SYSTEM TOTAL				282	2110	OA ADDED FOR KITCHEN EXHAUST MAKEUP
	ENTRY 100 / HALL 102	CORRIDOR	0 (115 SQFT)	0 CFM / PERSON 0.06 CFM / SQFT	7	186	
EF-1	DINING ROOM 101	CAFETERIA, FAST FOOD	66 (655 SQFT)	7.5 CFM / PERSON 0.18 CFM / SQFT	613	1389	
	SERVING AREA 105	RECEPTION AREAS	3 (88 SQFT)	5 CFM / PERSON 0.06 CFM / SQFT	21	155	
CALCULATED OUTSIDE AIR FOR SYSTEM TOTAL				641	1740	OA ADDED FOR KITCHEN EXHAUST MAKEUP	
KEF-1, KEF-2	MEN 103	TOILET ROOMS (INTERMITTENT)	2 W.C.	70 CFM / W.C.	140	150	
	WOMEN 104	TOILET ROOMS (INTERMITTENT)	2 W.C.	70 CFM / W.C.	140	150	
CALCULATED EXHAUST AIR FOR SYSTEM TOTAL				280	300		
KEF-1, KEF-2	TOTAL KITCHEN AREAS	KITCHENS (COOKING)	863 SQFT	0.7 CFM / SQFT	604	3210	
	CALCULATED EXHAUST AIR FOR SYSTEM TOTAL				604	3210	EA ADDED FOR GREASE HOOD OPERATION

2018 APPENDIX B BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS MECHANICAL DESIGN (PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
 winter dry bulb: 20.6°F
 summer dry bulb: 94.6°F

Interior design conditions
 winter dry bulb: 70°F
 summer dry bulb: 75°F
 relative humidity: 50%

Building heating load: 374.7 MBh
Building cooling load: 368.1 MBh

Mechanical Spacing Conditioning System

Unitary
 description of unit: Packaged RTUs
 heating efficiency: 80% to 81%
 cooling efficiency: 12.3 to 12.7 EER, 17.2 to 18.8 IEER
 size category of unit: 13 to 18 tons

Boiler
 Size category. If oversized, state reason.: N/A

Chiller
 Size category. If oversized, state reason.: N/A

List equipment efficiencies: See Above

COMcheck Software Version 4.1.5.1 Mechanical Compliance Certificate

Project Information

Energy Code: 2015 IECC
 Project Title: Whataburger
 Location: Gastonia, North Carolina
 Climate Zone: 3a
 Project Type: New Construction

Construction Site: 3415 East Franklin Blvd, Gastonia, NC
 Owner/Agent: Whataburger
 Designer/Contractor: BL Companies, Inc., 355 Research Parkway, Meriden, CT 06450

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):
 Heating: 1 each - Central Furnace, Gas, Capacity = 219 kBtu/h
 Proposed Efficiency = 81.00% EER, Required Efficiency: 80.00% EER or 78% AFUE
 Cooling: 1 each - Single Package DX Unit, Capacity = 210 kBtu/h, Air-Cooled Condenser, Air Economizer
 Proposed Efficiency = 12.30 EER, Required Efficiency: 10.80 EER + 12.2 IEER
 Fan System: FAN SYSTEM 1 | RTU-1 - Compliance (Motor nameplate HP method) : Passes

Fans:
 FAN 1 Supply, Constant Volume, 3650 CFM, 3.0 motor nameplate hp, 1.2 fan efficiency grade

1 RTU-2 (Single Zone):
 Heating: 1 each - Central Furnace, Gas, Capacity = 156 kBtu/h
 Proposed Efficiency = 80.00% EER, Required Efficiency: 80.00% EER or 78% AFUE
 Cooling: 1 each - Single Package DX Unit, Capacity = 159 kBtu/h, Air-Cooled Condenser, Air Economizer
 Proposed Efficiency = 12.70 EER, Required Efficiency: 10.80 EER + 12.2 IEER
 Fan System: FAN SYSTEM 2 | RTU-2 - Compliance (Motor nameplate HP method) : Passes

Fans:
 FAN 2 Supply, Constant Volume, 2240 CFM, 2.0 motor nameplate hp, 1.5 fan efficiency grade

1 GWH-1:
 Gas Storage Water Heater, Capacity: 50 gallons, Input Rating: 100 kBtu/h w/ Circulation Pump
 Proposed Efficiency: 96.00% EER, Required Efficiency: 80.00% EER

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 2015 IECC requirements in COMcheck Version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Philip Anderson - Project Engineer
 Signature: Philip Anderson
 Date: 10/11/2024

Project Title: Whataburger
 Data filename: G:\J052312412302548\DOCS\Comcheck\2302548-Comcheck WB Gastonia, NC - Q2.cck
 Report date: 10/11/24

2018 NC Administrative Code and Policies
 Revised 6/15/2020

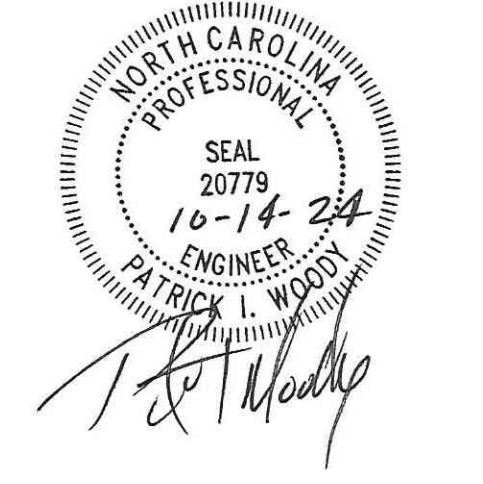
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Date	Description
10/14/24	PROTOTYPE UPDATE



Seal / Signature

Project Name
 WHATABURGER GASTONIA, NC

Date: 10.14.2024

Project Number
 2302548

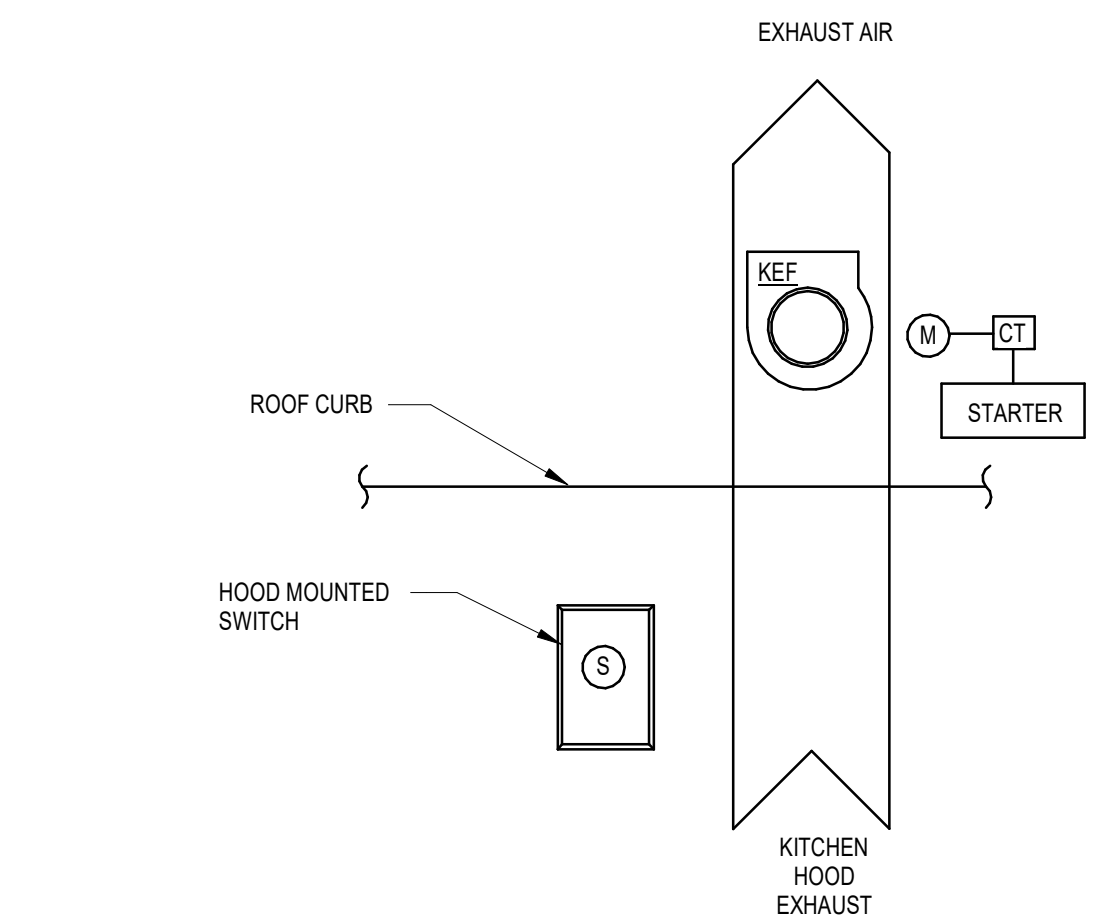
Description
 MECHANICAL SCHEDULES

Scale
 NOT TO SCALE

M6.1

CONTROL SYMBOLS

AE	ANALYZER ELEMENT		CARBON MONOXIDE SENSOR
DDC	DIRECT DIGITAL CONTROL		COMMUNICATION SIGNAL
BMS	BUILDING MANAGEMENT SYSTEM		HIGH STATIC PRESSURE SENSOR
RDC	ROOFTOP UNIT DDC CONTROLLER		DAMPER ACTUATOR
FACP	FIRE ALARM CONTROL PANEL		CONTROL VALVE
	DIFFERENTIAL PRESSURE INDICATOR		DX COOLING COIL
	DIFFERENTIAL PRESSURE SWITCH		NATURAL GAS HEATING COIL
	DIFFERENTIAL PRESSURE TRANSMITTER		HOT GAS REHEAT
	ELECTRIC DUCT HEATER		SUPPLY AIR FAN
	EXHAUST FAN		
	FLOW ELEMENT		
	FILTER		
	FLOW SWITCH		
	HUMIDISTAT		
	HIGH TEMPERATURE LIMIT SWITCH		
	MOTOR		
	PRESSURE CONTROL VALVE		
	PRESSURE TRANSMITTER		
	SMOKE DETECTOR		
	TEMPERATURE SENSOR		
	TEMPERATURE CONTROL VALVE		
	LOW LIMIT THERMOSTAT (FREEZESTAT)		
	TEMPERATURE TRANSMITTER		
	VARIABLE FREQUENCY DRIVE		
	MOTOR STARTER (PROVIDE CONTROL RELAY)		
	CURRENT TRANSDUCER		
	OCCUPANCY SENSOR		



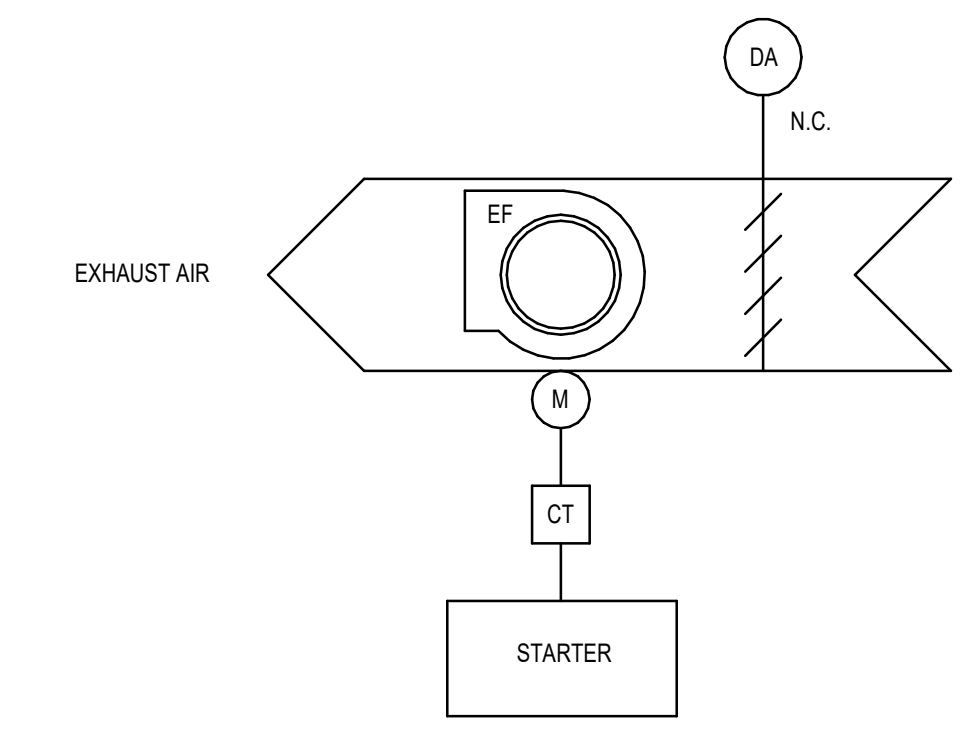
SEQUENCE OF OPERATION

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 DUCT SMOKE, THE KITCHEN EXHAUST FAN SHALL BE CYCLED OFF. FAN STATUS SHALL BE REPORTED TO THE BAS.

B1 KITCHEN HOOD EXHAUST FAN CONTROL DIAGRAM
N.T.S.

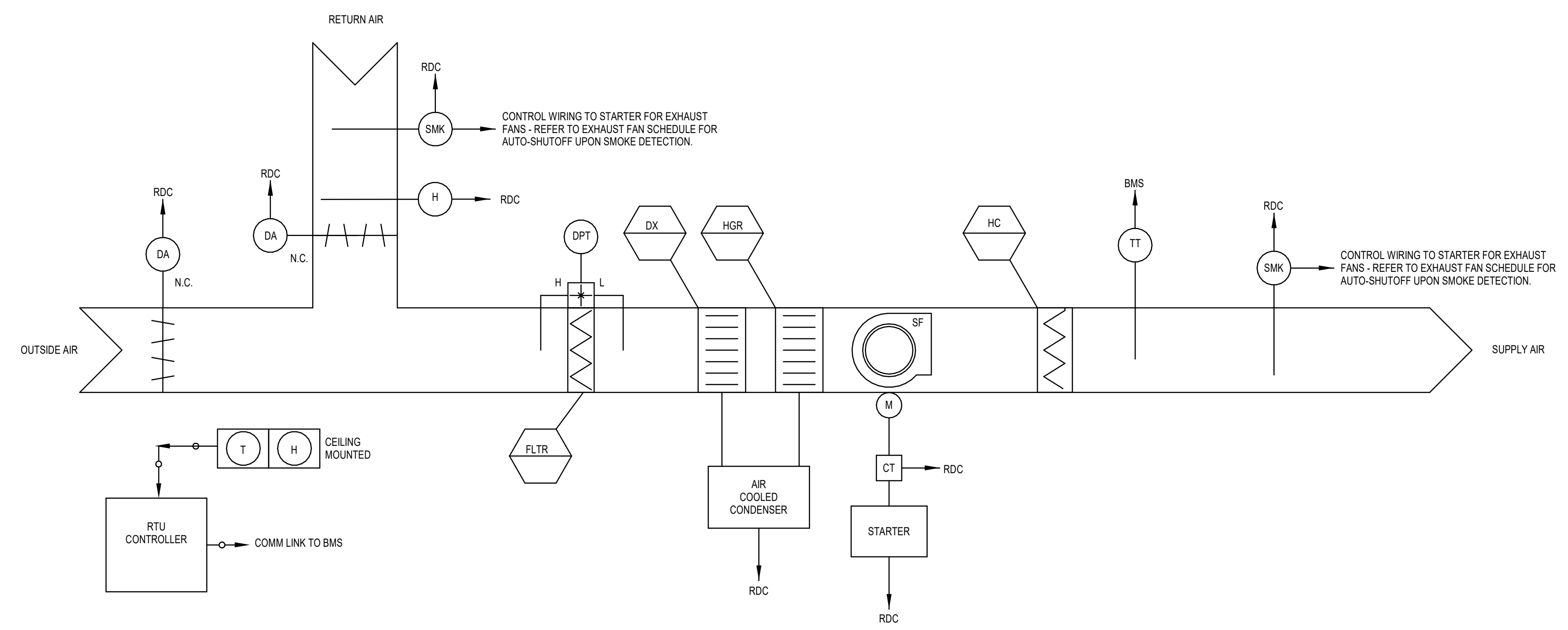


SEQUENCE OF OPERATION

OPERATING CONDITIONS:
THE GENERAL EXHAUST FAN SHALL BE INTERLOCKED WITH THE RESTROOM OCCUPANCY SENSORS. 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.

B2 GENERAL EXHAUST FAN CONTROL DIAGRAM
N.T.S.



SEQUENCE OF OPERATION

OPERATING CONDITION - CONTINUOUS 24/7

THE PILOT 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.

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

TEMPERATURE CONTROL
OCCUPIED MODE - THE BMS WILL MAINTAIN THE FOLLOWING SPACE TEMPERATURE SETPOINTS:
• COOLING: 75°F, 55% RH (ADJUSTABLE)
• HEATING: 70°F (ADJUSTABLE)

SETBACK MODE - THE BMS WILL MAINTAIN THE FOLLOWING SPACE TEMPERATURE SETPOINTS:
• COOLING: 85°F (ADJUSTABLE) (ADJUST TO 80°F 1-HR PRIOR TO OCCUPANCY)
• HEATING: 80°F (ADJUSTABLE) (ADJUST TO 85°F 1-HR PRIOR TO OCCUPANCY)

THERE SHALL BE A DEADBAND OF +/- 5°F ON ALL TEMPERATURE CONTROL.

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

SEQUENCE OF OPERATION (CONTINUED)

ECONOMIZER OPERATION
BASED ON THE RTU INTERNAL DIFFERENTIAL ENTHALPY 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.

UNIT SHUTDOWN
UNIT SHALL BE DE-ENERGIZED UPON DETECTION OF SMOKE IN UNIT 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 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.

A1 PACKAGED ROOFTOP UNIT CONTROLS DIAGRAM
N.T.S.

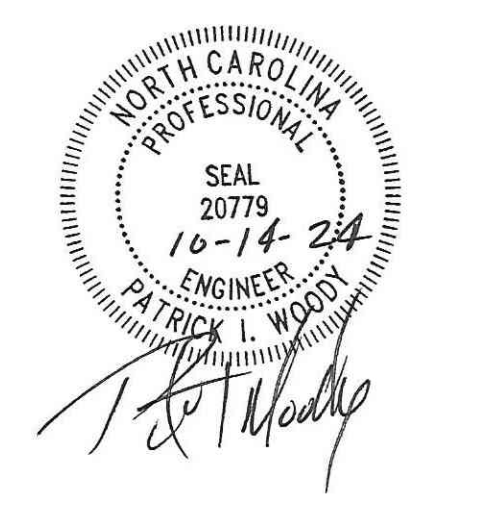
PREPARED FOR:

**Architecture
Engineering
Environmental
Land Surveying
Companies**

3420 Torrington Way, Ste 210
Charlotte, NC 28217
(704) 565-7070
(203) 630-2815 Fax

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Date	Description
------	-------------



Seal / Signature

Project Name
WHATABURGER GASTONIA, NC

Date: 10.14.2024

Project Number
2302548

Description
MECHANICAL CONTROLS

Scale
NOT TO SCALE

M7.1

APPROVALS / CERTIFICATIONS
 THIS TYPE 1 HOOD COMPLIES WITH THE FOLLOWING:
UL710 / ULC-5646
 STANDARD FOR EXHAUST HOOD AND RELATED CONTROLS
 FOR COMMERCIAL AND INSTITUTIONAL COOKING EQUIPMENT
NFPA 96
 NATIONAL FIRE PROTECTION ASSOCIATION - STD 96
NSF-2
 NATIONAL SANITATION FOUNDATION NO. 2 "FOOD SERVICE EQUIPMENT"
NOTE: THE EXHAUST AIR FLOW RATES WERE ESTABLISHED UNDER CONTROLLED
 LABORATORY CONDITIONS. GREATER EXHAUST RATES MAY BE REQUIRED FOR
 COMPLETE VAPOR AND SMOKE REMOVAL IN SPECIFIC INSTALLATIONS.
FILTERS/GREASE REMOVAL
 THIS HOOD UTILIZES A COMBINATION OF FLAMEGUARD SS TYPE-S 12X16 AND/OR 12X20
 ARE KAGON TRAPPER S/S FILTERS 7001 SERIES 12X16 & 12X20
 MUST BE UL LISTED STAINLESS STEEL GREASE FILTERS.
***THEY MUST BE INSTALLED AT ALL TIMES DURING VENTILATION HOOD OPERATION
 THIS UNIT REQUIRES: (2) 12X20 AND (2) 12X16
 FLAMEGUARD FILTER, S/S BAFFLE TYPE VI
 (NOTE) HOOD INCLUDES TEMPERATURE INTERLOCK SYSTEM**

NOTE: OUTER SHELL
 OF HOOD IS 18 GA. 304 SS W/TL
 #4 FINISH

NOTE: PER NFPA 96, INSTALL HOOD WITH
 BAFFLE PLATE SUCH THAT FLAMES AND
 COMBUSTION GASES TRAVEL A
 MINIMUM OF 18" FROM THE HEAT
 SOURCE, AND NOT LESS THAN 6" FROM
 THE GREASE REMOVAL DEVICE.
 COORDINATE WITH G.C. AND HOOD
 MANUFACTURER'S REPRESENTATIVE
 TO ENSURE HOOD IS INSTALLED PER
 THESE REQUIREMENTS.

DATE: 6/15/2021	MATERIAL:	REV	REVISION	DATE	CUSTOMER:
DESIGN: Haredondo	WIDTH: N/A	-			
WEIGHT: 133.54 kg	GRAB LENGTH: N/A				

REVISION HISTORY: CHANGE DISC: FIRST CHECK IN

NOTE: USE SILICONE X-7-3-1
 (USE SILICONE X-7-3-1)

DATE: 6/16/2021	MATERIAL:	REV	REVISION	DATE	CUSTOMER:
DESIGN: Haredondo	WIDTH: N/A	-			
WEIGHT: 133.54 kg	GRAB LENGTH: N/A				

REVISION HISTORY: CHANGE DISC: FIRST CHECK IN

FOR REFERENCE ONLY
 THE HVAC CONTRACTOR SHALL
 FURNISH AND INSTALL A COMPLETE
 AUTOMATIC FIRE PROTECTION SYSTEM
 FOR THE RANGE HOODS APPROVED
 EQUAL TO ANSUL SYSTEM. COMPLETE
 HOOD AND ANSUL SYSTEM
 INFORMATION TO BE SUBMITTED BY
 OTHERS IN FUTURE SUBMISSION.



BL Architecture
 Engineering
 Environmental
 Land Surveying
 Companies

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 (704) 565-7070
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(ANSUL) PIPING AND CONDUIT HOOD
 PENETRATIONS TO BE WELDED
 [APLICAR SOLDADURA AL REFORZO DE LA
 SALIDA DE TUBERIA (ANSUL) AL EXTERIOR]

IMPORTANT NOTE:
 IF THERE IS ANY MODIFICATION THAT NEEDS TO BE DONE IN THE MANUAL,
 USE THE NEXT ROUTE WHERE YOU CAN FIND IT.
 Li: Certification Files\HKO GENERIC HOOD MANUAL

NOTA IMPORTANTE:
 SI EXISTE CUALQUIER MODIFICACION QUE NECESITE SER HECHA
 EN EL MANUAL,
 USAR LA SIGUIENTE RUTA DONDE PODRAS ENCONTRARLO
 Li: Certification Files\HKO GENERIC HOOD MANUAL

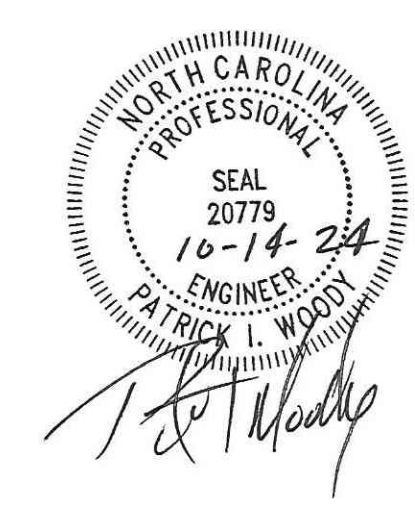
DATE: 6/16/2021	MATERIAL:	REV	REVISION	DATE	CUSTOMER:
DESIGN: Haredondo	WIDTH: N/A	-			
WEIGHT: 133.54 kg	GRAB LENGTH: N/A				

REVISION HISTORY: CHANGE DISC: FIRST CHECK IN

DATE: 11/14/2018	MATERIAL:	REV	REVISION	DATE	CUSTOMER:
DESIGN: KURAS	WIDTH: N/A	A		3/26/2018	
SCALE: GREEN LENGTH: N/A					

REVISION HISTORY: CHANGE DISC: FIRST CHECK IN

Date	Description
1 10/14/24	PROTOTYPE UPDATE



Seal / Signature

ITEM NO.	QTY	PART NUMBER	DESCRIPTION	MATERIAL
1	1	A-12-006L	SWITCH, DUAL SNAP ACTION #423879 WITH LEADS	Generic
2	2	A-12-013	3 GAL. TANKSHELL W/ADAPTER #429862	Generic
3	4	A-12-023	POSSIBLE LINE 165 (DIP) #445799 (L)	Generic
4	3	A-12-045	PULLLEY ELBOW #423251	Generic
5	1	A-12-080	WIRE ROPE (S/S) STAINLESS STEEL	Generic
6	1	A-12-089	HOSE GROMMET PACKAGE #488511	Generic
7	1	A-12-2983	R102 MECH. RELEASE ASSY #429853	Generic
8	1	A-12-29870	R102 1/2 BOX SHPG ASH #429870	Generic
9	2	E-8-64	CONNECTOR, 1/2 STR. AWT #10501	Generic

DATE: 1/8/2019	MATERIAL:	REV	REVISION	DATE	CUSTOMER:
DESIGN: achavez	WIDTH: N/A	-			
SCALE: GREEN LENGTH: N/A					

REVISION HISTORY: CHANGE DISC: FIRST CHECK IN

H&K DALLAS #HKD023
 FRY HOOD U.L. #MH16346
 (STANDARD USED U.L. 710)
 BUILT TO U.L. & NFPA 96 STANDARDS

DATE: 02/18/2016	MATERIAL:	REV	REVISION	DATE	CUSTOMER:
DESIGN: A.BARTON	WIDTH: N/A	B			
SCALE: GREEN LENGTH: N/A					

REVISION HISTORY: CHANGE DISC: FIRST CHECK IN

H&K International
 P.O. Box 180729 Dallas, Texas 75218, Telephone (214) 818-3500 FAX (214) 818-3582

July 20th, 2022

To Whom It May Concern,

H+K Hoods comply with IMC Section 506.5.4 and 507.2.6 for zero clearance to combustible and non-combustible walls.

Should you have any questions, please contact me.

Sincerely,

Bryan Tonn
 Director of Engineering, H+K International, Inc.
 2200 Skyline Drive
 Mesquite, TX 75149
 (214) 818-3580
 bryan.tonn@hki.com

Project Name
WHATABURGER GASTONIA, NC

Date: 10.14.2024

Project Number
2302548

Description
HOOD DRAWINGS

Scale
NOT TO SCALE

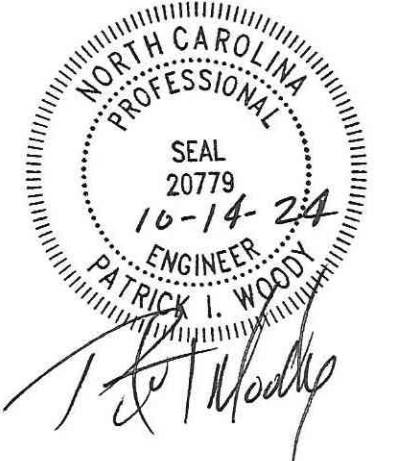
M8.1



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Date	Description
1 10/14/24	PROTOTYPE UPDATE



Seal / Signature

Project Name
WHATABURGER GASTONIA, NC

Date: 10.14.2024

Project Number

2302548

Description
HOOD DRAWINGS

Scale
NOT TO SCALE

M8.2

TOP VIEW

FRONT VIEW

RIGHT VIEW

ISOMETRIC BACK VIEW

APPROVALS / CERTIFICATIONS

THIS HOOD TYPE 1 HOOD COMPLIES WITH THE FOLLOWING:
UL710 / ULC-5646
 STANDARD FOR EXHAUST HOOD AND RELATED CONTROLS FOR COMMERCIAL AND INSTITUTIONAL COOKING EQUIPMENT
NFPA96
 NATIONAL FIRE PROTECTION ASSOCIATION - STD 96
NSF2
 NATIONAL SANITATION FOUNDATION NO. 2 "FOOD SERVICE EQUIPMENT"

NOTE: THE EXHAUST AIR FLOW RATES WERE ESTABLISHED UNDER CONTROLLED LABORATORY CONDITIONS. GREATER EXHAUST RATES MAY BE REQUIRED FOR COMPLETE VAPOR AND SMOKE REMOVAL IN SPECIFIC INSTALLATIONS.

FILTERS/GREASE REMOVAL
 * THIS HOOD UTILIZES A COMBINATION OF FLAMEGUARD SS TYPE-S 12X16 AND/OR 12X20 ARE KASON TRAPPER S/S FILTERS 7001 SERIES 12X16 OR 20X20 MUST BE UL LISTED STAINLESS STEEL GREASE FILTERS
 * THEY MUST BE INSTALLED AT ALL TIMES DURING VENTILATION HOOD OPERATION
 THIS UNIT REQUIRES: FILTERS (8)
 FLAMEGUARD FILTER, S/S BAFFLE TYPE VI
 (8) 12X20
 (NOTE) HOOD INCLUDES TEMPERATURE INTERLOCK SYSTEM

NOTE: PER NFPA 96, INSTALL HOOD WITH BAFFLE PLATE SUCH THAT FLAMES AND COMBUSTION GASES TRAVEL A MINIMUM OF 18" FROM THE HEAT SOURCE AND NOT LESS THAN 6" FROM THE GREASE REMOVAL DEVICE. COORDINATE WITH C.C. AND HOOD MANUFACTURER'S REPRESENTATIVE TO ENSURE HOOD IS INSTALLED PER THESE REQUIREMENTS.

NOTE: OUTER SHELL OF HOOD IS SS OR 304 SS MATL. #4 FINISH

NOTE: 275 CFM'S PER LINEAR FOOT INCLUDES BOTH SIDES MINIMUM REQD. 1994 CFM'S

NOTE: FILTERS INSTALLED AT 45 DEGREE ANGLES.
 * DRIP TRAY AND CUP SHALL BE INSTALLED BELOW THE BOTTOM EDGE OF FILTERS.

DATE: 8/11/2022	MATERIAL: N/A	REV: B	REVISION: 20230019 FR	DATE: 1/10/2023	CUSTOMER:
DRAWN: G.Viedo	WIDTH: N/A				
WEIGHT: N/A	GRAIN LENGTH: N/A				
COMMENTS:					
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SIZE: A3	SHEET: 2 OF 3	TITLE: 87" DOUBLE SIDED CLAM SHELL GRILL HOOD	ITEM NO: WTB1603		

metric

ALL DOCUMENTATION RELATED TO THIS UNIT IS RELEASED ON METRIC SYSTEM.
 (TODA LA DOCUMENTACION RELACIONADA CON ESTA UNIDAD ESTA LIBERADA EN SISTEMA METRIC)

DOUBLE SIDE GRILL HOOD SUPPLIED WITH (1) 3.0 GAL TANK

DOUBLE SIDE GRILL HOOD INCLUIDO CON (1) TANQUE DE 3.0 GAL

BILL OF MATERIALS					
ITEM NO.	QTY REQD.	PART NUMBER	REV	DESCRIPTION	MATERIAL
1	1	WTB1603.5100	-	LIQUID LINE ASSEMBLY	
2	1	WTB1603.5200	-	DETECTION LINE ASSEMBLY	

ISOMETRIC VIEW

DATE: 8/9/2022	MATERIAL: N/A	REV: -	REVISION: -	DATE: -	CUSTOMER:
DRAWN: G.Viedo	WIDTH: N/A				
WEIGHT: 5.25 kg	GRAIN LENGTH: N/A				
COMMENTS:					
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SIZE: A3	SHEET: 1 OF 1	TITLE: ANSUL ASSY	ITEM NO: WTB1603.5000		

ANSUL BOX FRONT

BILL OF MATERIALS					
ITEM N	QTY R	PART NUMBER	RE	DESCRIPTION	MATERIAL
1	1	A-12-013		3 GAL. TANKSHELL W/ADAPTER #429862	Generic
2	6	A-12-022		FUSIBLE LINK, 165F DEG, #415739	Generic
3	2	A-12-045		PULLEY ELBOW #423251	Generic
4	1	A-12-429853		R102 MECH. RELEASE ASSY #429853	Generic
5	2	E-8-64		CONNECTOR, 1/2 STR./R/T #TC601	Generic
6	1	A-12-006L		SWITCH, DUAL SNAP ACTION #423879 WITH LEADS	Generic
7	1	A-12-080		WIRE ROPE (50' STAINLESS STEEL)	Generic

DATE: 6/3/2013	MATERIAL: N/A	SYM: -	REVISION: -	DATE: -	CUSTOMER:
DRAWN: D.Boote	WIDTH: N/A				
SCALE: -	GRAIN LENGTH: N/A				
COMMENTS:					
THESE DRAWINGS AND SPECIFICATION ARE THE PROPERTY OF H&K AND SHALL NOT BE REPRODUCED OR COPIED OR TRANSMITTED TO A THIRD PARTY WITHOUT THE WRITTEN PERMISSION OF H&K.					
SIZE: B	SHEET: 1 OF 1	TITLE: REMOTE ANSUL SYSTEM	ITEM NO: A-WTB1263		

FOR REFERENCE ONLY

THE HVAC CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE AUTOMATIC FIRE PROTECTION SYSTEM FOR THE RANGE HOODS APPROVED EQUAL TO ANSUL SYSTEM. COMPLETE HOOD AND ANSUL SYSTEM INFORMATION TO BE SUBMITTED BY OTHERS IN FUTURE SUBMISSION.