ABBREVIATIONS

ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
ADJ	ADJUSTABLE
A/E	ARCHITECT/ENGINEER
AF	AIR FOIL
AFF	ABOVE FINISHED FLOOR
AFMS	AIR FLOW MEASURING STATION
AL	ALUMINUM
AMP	AMPERE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
ASC	ABOVE SUSPENDED CEILING
AUTO	AUTOMATIC
B	BOILER
BB	BASEBOARD
BC	BOOSTER COIL
BCU	BLOWER COIL UNIT
BDD	BACK DRAFT DAMPER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BI	BACKWARD INCLINED
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOS	BOTTOM OF STRUCTURE
BRG	BEARING
BS	BRINE SUPPLY
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
C	CONVECTOR
CA	COMBUSTION AIR
CAB	CABINET
CCC	COOLING COIL CONDENSATE
CD	CEILING DIFFUSER
CF	CEILING (DESTRATIFICATION) FAN
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON OR CUBIC INCH
CL	CENTERLINE
CLG	CEILING
CMU	CONCRETE MASONARY UNIT
COMB	COMBINATION OR COMBUSTION
CONC	CONCRETE
COND	CONDENSATE
CONTR	CONTRACTOR
COP	COEFFICIENT OF PERFORMANCE
CP	CONDENSATE PUMP
CRU	COMPUTER ROOM UNIT
CU	COPPER
CUH	CABINET UNIT HEATER
CW	COLD WATER
D	DRAIN
DB	DRY BULB
DCO	DOOR CUTOFF BY GC
DDC	DIRECT DIGITAL CONTROL
DEPT	DEPARTMENT
DG	DOOR GRILLE BY GC
DIA	DIAMETER
DN	DOWN

DSA	DUCT SOUND ATTENUATOR
DSF	DESTRATIFICATION FAN
DWD	DUAL WALL DUCTWORK
DWDI	DOUBLE WIDTH DOUBLE INLET
DWG	DRAWING
E	EXISTING
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EER	ENERGY EFFICIENCY RATIO
EG	EXHAUST GRILLE
EL	ELEVATION
ELEC	ELECTRICAL
EQUIP	EQUIPMENT
ER	EXHAUST REGISTER
ERV	ENERGY RECOVERY VENTILATOR
ETR	EXISTING TO REMAIN
EWH	ELECTRIC WALL HEATER
EXH	EXHAUST
EXT	EXTERIOR OR EXTERNAL
F	FURNACE
°F	DEGREES FAHRENHEIT
FA	FREE AREA
FC	FORWARD CURVED
FCU	FAN COIL UNIT
FD	FLOOR DRAIN OR FIRE DAMPER
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FPC	FIRE PROTECTION CONTRACTOR
FPM	FEET PER MINUTE
FS	FLOW SWITCH
FT	FOOT OR FEET
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GV	GAS VENT
H	HUMIDIFIER
HB	HOSE BIBB
HC	HEATING CONTRACTOR
HD	HUB DRAIN
HDT	HORIZONTAL DRAW THRU
HG	MERCURY
HGT	HEIGHT
HP	HORSEPOWER
HR	HOUR
HRU	HEAT RECOVERY UNIT
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HYD	HYDRANT
HZ	HERTZ
IH	INTAKE HOOD
IN	INCH
INV	INVERT

IPLV	INTEGRATED PART LOAD VALUE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LD	LINEAR DIFFUSER
LR	LINEAR RETURN
M	MOTOR OPERATED DAMPER
MAT	MIXED AIR TEMPERATURE
MA	MIXED AIR
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS/HOUR
MCA	MINIMUM CIRCUIT AMPS
MECH	MECHANICAL
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE-UP AIR UNIT
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NPLV	NOMINAL PART LOAD VALUE
NTS	NOT TO SCALE
OA	OUTDOOR AIR
OAT	OUTDOOR AIR TEMPERATURE
OC	ON CENTER
OPD	OPPOSED BLADE DAMPER
PC	PLUMBING CONTRACTOR
PD	PUMP DISCHARGE
PLBG	PLUMBING
POC	POINT OF CONNECTION
PRELIM	PRELIMINARY
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
R	REFRIGERANT
RA	RETURN AIR
RCP	RADIANT CEILING PANEL
RD	ROOF DRAIN
REQD	REQUIRED
RF	RETURN FAN
RG	RETURN GRILLE
RH	RELIEF HOOD
RHG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
RTU	ROOF TOP UNIT
S	SUPPLY
SA	SUPPLY AIR
SCR	SILICONE CONTROLLED RECTIFIERS
SD	SLOT DIFFUSER

SEER	SEASONAL ENERGY EFFICIENCY RATIO
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SM	SHEET METAL
SQ FT	SQUARE FEET
SR	SUPPLY REGISTER
SRG	SECURITY RETURN GRILLE
SRV	SAFETY RELIEF VALVE
SS	STAINLESS STEEL
SWSI	SINGLE WIDTH SINGLE INLET
T	THERMOSTAT/TEMPERATURE SENSOR
TA	THROWAWAY
TCAC	TEMPERATURE CONTROL AIR COMPRESSOR
TCC	TEMPERATURE CONTROL CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TCV	TEMPERATURE CONTROL VALVE
TEMP	TEMPORARY
TF	TRANSFER FAN
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TG	TRANSFER GRILLE
TO	TEST OPENINGS
TS	TIP SPEED
TYP	TYPICAL
UH	UNIT HEATER
UNEX	UNEXCAVATED
V	VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VSC	VARIABLE SPEED CONTROL
W TO W	WALL TO WALL
WB	WET BULB
WC	WATER COLUMN
WF	WALL FIN
WP	WEATHER PROOF
YH	YARD HYDRANT

PIPING SYSTEMS

- GENERAL SHUTOFF VALVE SEE SPECIFICATIONS FOR TYPE
- PLUG VALVE (GAS)
- BLIND FLANGE
- CAP
- CONNECTION, BOTTOM
- CONNECTION, TOP
- ELBOW, TURNED UP
- ELBOW, TURNED DOWN
- REDUCER, CONCENTRIC
- REDUCER, ECCENTRIC - STRAIGHT INVERT
- REDUCER, ECCENTRIC - STRAIGHT CROWN
- PITCH OF PIPE
- PRESSURE GAUGE AND COCK
- FLOW DIRECTION IN PIPES
- UNION
- PIPE FLANGE
- COND — CONDENSATE
- CW — COLD WATER (DOMESTIC)
- V — ATMOSPHERIC VENT
- G — GAS
- RHG — REFRIGERANT HOT GAS
- RS — REFRIGERANT SUCTION
- RL — REFRIGERANT LIQUID
- H — HUMIDIFICATION LINE
- D — DRAIN

DUCTWORK SYSTEMS

- 20/12 — DUCT SIZE, (FIRST FIGURE IS SIDE SHOWN)
- 12" Ø — ROUND DUCT
- 20/12 Ø — OVAL DUCT
- AXIAL FLOW FAN
- UP/DN — CHANGE OF ELEVATION IN DIRECTION OF AIR FLOW
- AD — ACCESS DOOR, VERTICAL OR HORIZONTAL
- ACOUSTICAL DUCT LINER
- DUCT LAGGING
- FLEXIBLE CONNECTION
- DUCT SOUND ATTENUATOR
- DUCT TRANSITION (DOUBLE LINE)
- DUCT TRANSITION (RECT. TO ROUND)
- DUCT TRANSITION (SINGLE LINE)
- HIDDEN DUCTWORK
- B — BACK DRAFT DAMPER
- DUCT HEATER, ELECTRIC
- M — MOTOR OPERATED DAMPER
- MANUAL VOLUME DAMPER
- S — SMOKE DETECTOR
- SMOKE DAMPER
- NEW / EXISTING — FIRE DAMPER
- NEW / EXISTING — COMBINATION FIRE/SMOKE DAMPER
- STANDARD BRANCH, SUPPLY, RETURN, OR EXHAUST, NO SPLITTER
- ROOF VENTILATOR OR HOOD ON ROOF ABOVE
- ROOF VENTILATOR OR HOOD ON ROOF
- DUCT CAP
- END OF DUCT
- EXISTING / EXISTING / NEW / NEW — POSITIVE PRESSURE DUCT SECTION
- POSITIVE PRESSURE DUCT (DOWN OR AWAY)
- EXISTING / EXISTING / NEW / NEW — NEGATIVE PRESSURE DUCT SECTION
- NEGATIVE PRESSURE DUCT (DOWN OR AWAY)
- FLEXIBLE DUCT DIFFUSER CONNECTION
- OR — SIDEWALL AIR DEVICE
- EXHAUST, RETURN, OR TRANSFER AIR DEVICE
- SUPPLY AIR DEVICE
- LINEAR OR SLOT AIR DEVICE
- SIZE — TRANSFER GRILLE ASSEMBLY
- LOUVER AND BIRD SCREEN
- DG / X.X ØFA — DOOR GRILLE
- DCO — 3/4" DOOR CUTOFF (UNDERCUT) BY GC
- ELBOW WITH TURNING VANES
- TERMINAL UNIT, MIXING
- TERMINAL UNIT, VARIABLE VOLUME WITH REHEAT
- TERMINAL UNIT, VARIABLE VOLUME WITH REHEAT
- TERMINAL UNIT, VARIABLE VOLUME
- BOOSTER COIL
- UNIT HEATER
- AIR FLOW
- EXISTING / NEW — POINT OF NEW CONNECTION (PIPE OR DUCT)
- SQUARE FEET
- ELEVATION SYMBOL

GENERAL SYMBOLS

- T — THERMOSTAT OR TEMPERATURE SENSOR
- T — THERMOSTAT OR TEMPERATURE SENSOR WITH SECURITY COVER
- H — HUMIDISTAT OR HUMIDITY SENSOR
- H — HUMIDISTAT OR HUMIDITY SENSOR WITH SECURITY COVER
- MOTOR STARTER
- S — SPEED CONTROLLER
- $ — START/STOP SWITCH
- CO2 — CARBON DIOXIDE SENSOR
- EXISTING TO REMAIN (DUCTWORK, PIPING, & EQUIPMENT)
- EXISTING TO BE REMOVED (DUCTWORK, PIPING, & EQUIPMENT)
- NEW DUCTWORK/PIPING
- NEW EQUIPMENT

HVAC SHEET INDEX

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ISSUE

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EMPLOYMENT CENTER

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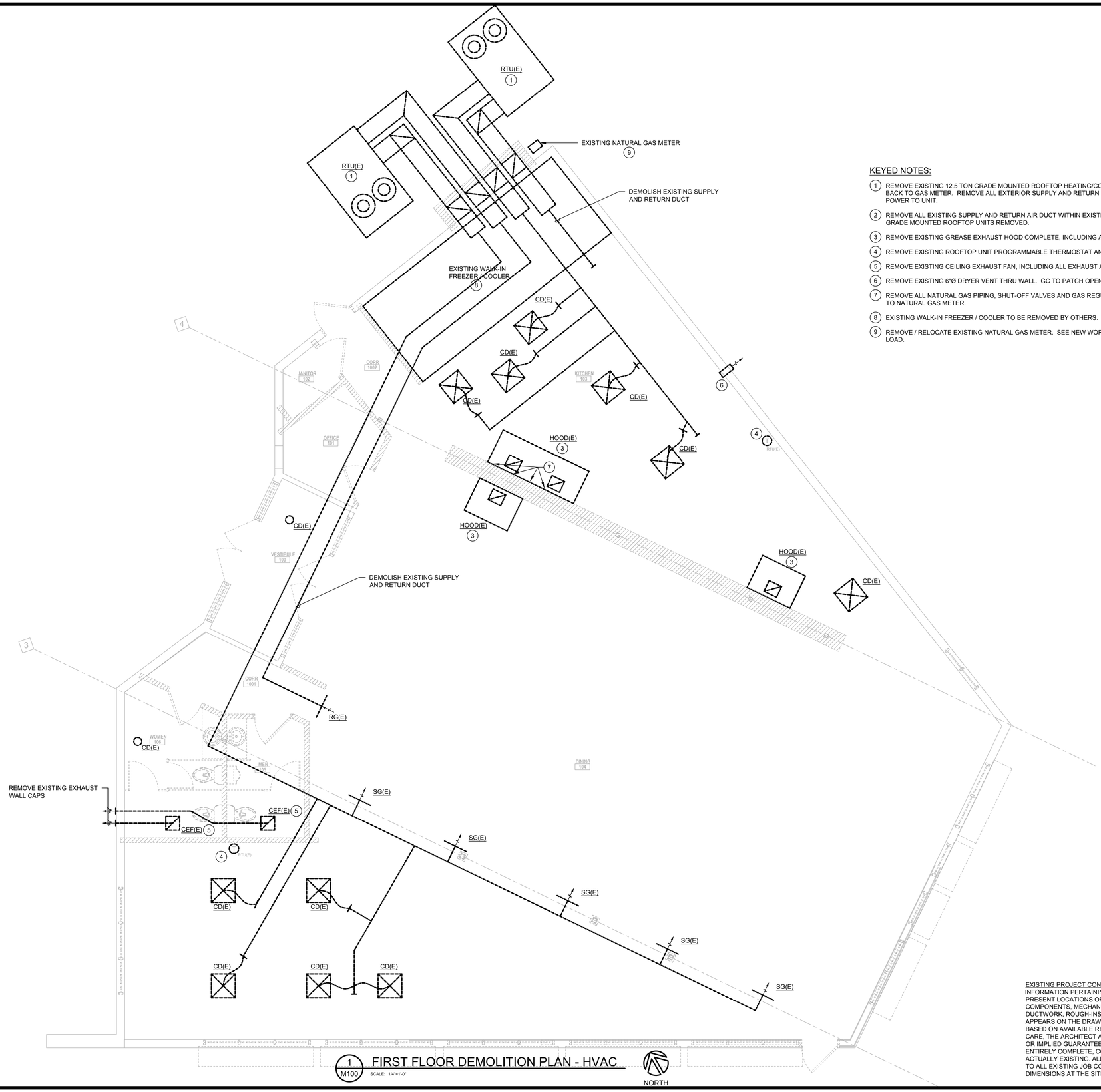
Contract No. 8213 / Munis
No. 10066

PROJECT NO.
16010-00

DRAWING
ABBREVIATIONS AND
SYMBOLS - HVAC

DATE
05.15.18

M000



1 M100 FIRST FLOOR DEMOLITION PLAN - HVAC

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

NORTH

KEYED NOTES:

1. REMOVE EXISTING 12.5 TON GRADE MOUNTED ROOFTOP HEATING/COOLING UNIT. REMOVE ALL NATURAL GAS PIPING BACK TO GAS METER. REMOVE ALL EXTERIOR SUPPLY AND RETURN DUCT INTO BUILDING. EC TO DISCONNECT POWER TO UNIT.
2. REMOVE ALL EXISTING SUPPLY AND RETURN AIR DUCT WITHIN EXISTING BUILDING ASSOCIATED WITH EXISTING GRADE MOUNTED ROOFTOP UNITS REMOVED.
3. REMOVE EXISTING GREASE EXHAUST HOOD COMPLETE, INCLUDING ALL DUCT TO EXHAUST FAN.
4. REMOVE EXISTING ROOFTOP UNIT PROGRAMMABLE THERMOSTAT AND ALL ASSOCIATED CONTROL WIRING.
5. REMOVE EXISTING CEILING EXHAUST FAN, INCLUDING ALL EXHAUST AIR DUCT. EC TO DISCONNECT POWER.
6. REMOVE EXISTING 6"Ø DRYER VENT THRU WALL. GC TO PATCH OPENING.
7. REMOVE ALL NATURAL GAS PIPING, SHUT-OFF VALVES AND GAS REGULATORS IN WALL, UP THRU CEILING AND BACK TO NATURAL GAS METER.
8. EXISTING WALK-IN FREEZER / COOLER TO BE REMOVED BY OTHERS.
9. REMOVE / RELOCATE EXISTING NATURAL GAS METER. SEE NEW WORK PLANS FOR NEW METER LOCATION AND GAS LOAD.

EXISTING PROJECT CONDITIONS:
INFORMATION PERTAINING TO EXISTING PROJECT CONDITIONS, SUCH AS PRESENT LOCATIONS OF ARCHITECTURAL AND STRUCTURAL BUILDING COMPONENTS, MECHANICAL AND ELECTRICAL EQUIPMENT, PIPING, DUCTWORK, ROUGH-INS AND OTHER MISCELLANEOUS CONSTRUCTION, APPEARS ON THE DRAWINGS. WHILE SUCH INFORMATION HAS BEEN BASED ON AVAILABLE RECORDS AND COLLECTED WITH REASONABLE CARE, THE ARCHITECT AND ENGINEER DO NOT ASSUME ANY EXPRESSED OR IMPLIED GUARANTEE THAT CONDITIONS SO INDICATED ARE SHOWN ENTIRELY COMPLETE, CORRECT AND REPRESENTATIVE OF THOSE ACTUALLY EXISTING. ALL CONTRACTORS SHALL SATISFY THEMSELVES AS TO ALL EXISTING JOB CONDITIONS PRIOR TO BIDDING, AND VERIFY ALL DIMENSIONS AT THE SITE.

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DRAWING
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PLAN - HVAC

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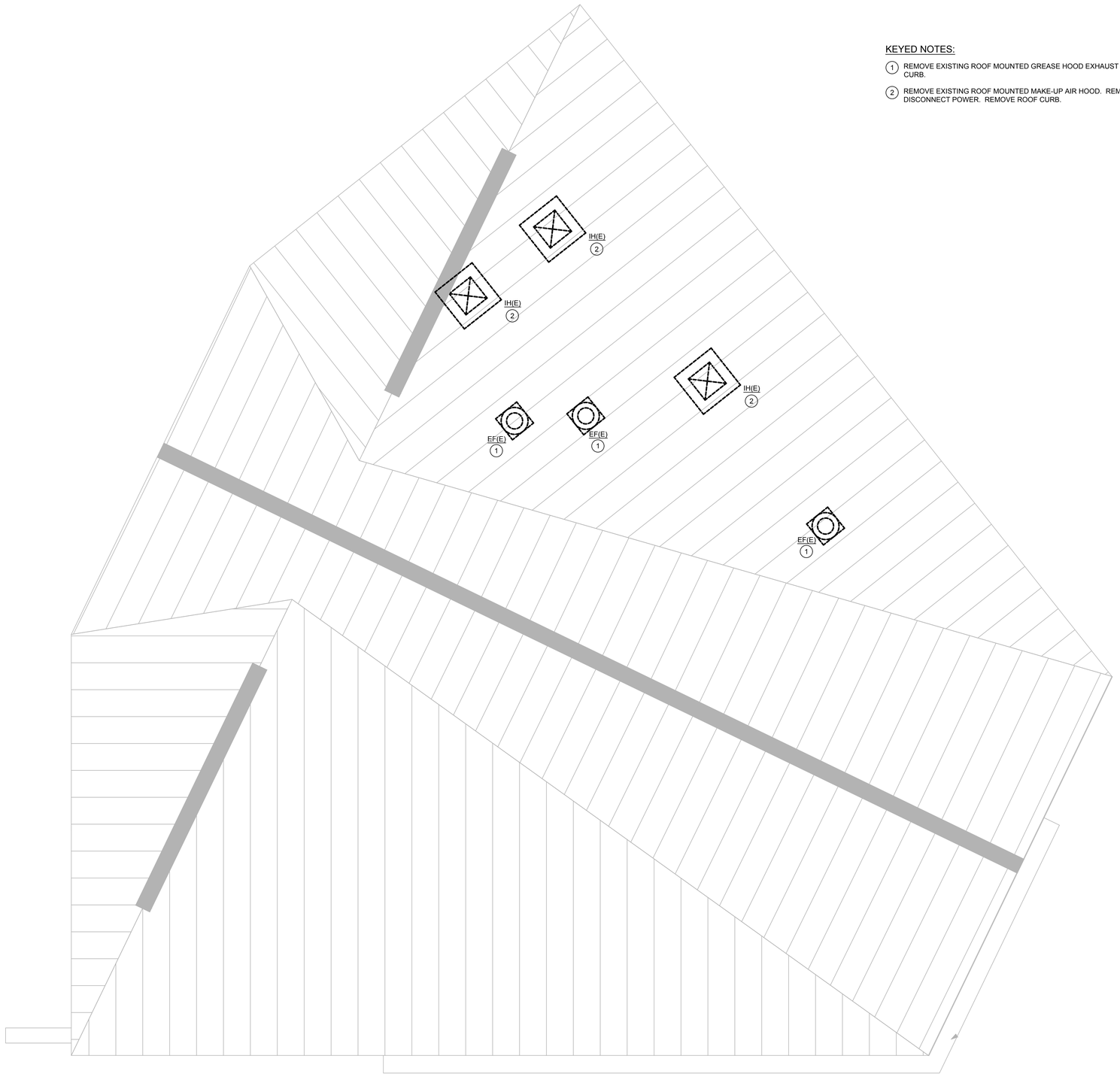
M100



KEYED NOTES:

1. REMOVE EXISTING ROOF MOUNTED GREASE HOOD EXHAUST FAN. EC TO DISCONNECT POWER. REMOVE ROOF CURB.
2. REMOVE EXISTING ROOF MOUNTED MAKE-UP AIR HOOD. REMOVE ALL NATURAL GAS PIPING BACK TO METER. EC TO DISCONNECT POWER. REMOVE ROOF CURB.

1 / M101 ROOF DEMOLITION PLAN - HVAC

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

NORTH

EXISTING PROJECT CONDITIONS:
INFORMATION PERTAINING TO EXISTING PROJECT CONDITIONS, SUCH AS PRESENT LOCATIONS OF ARCHITECTURAL AND STRUCTURAL BUILDING COMPONENTS, MECHANICAL AND ELECTRICAL EQUIPMENT, PIPING, DUCTWORK, ROUGH-INS AND OTHER MISCELLANEOUS CONSTRUCTION, APPEARS ON THE DRAWINGS. WHILE SUCH INFORMATION HAS BEEN BASED ON AVAILABLE RECORDS AND COLLECTED WITH REASONABLE CARE, THE ARCHITECT AND ENGINEER DO NOT ASSUME ANY EXPRESSED OR IMPLIED GUARANTEE THAT CONDITIONS SO INDICATED ARE SHOWN ENTIRELY COMPLETE, CORRECT AND REPRESENTATIVE OF THOSE ACTUALLY EXISTING. ALL CONTRACTORS SHALL SATISFY THEMSELVES AS TO ALL EXISTING JOB CONDITIONS PRIOR TO BIDDING, AND VERIFY ALL DIMENSIONS AT THE SITE.

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DRAWING
ROOF DEMOLITION
PLAN - HVAC

DATE
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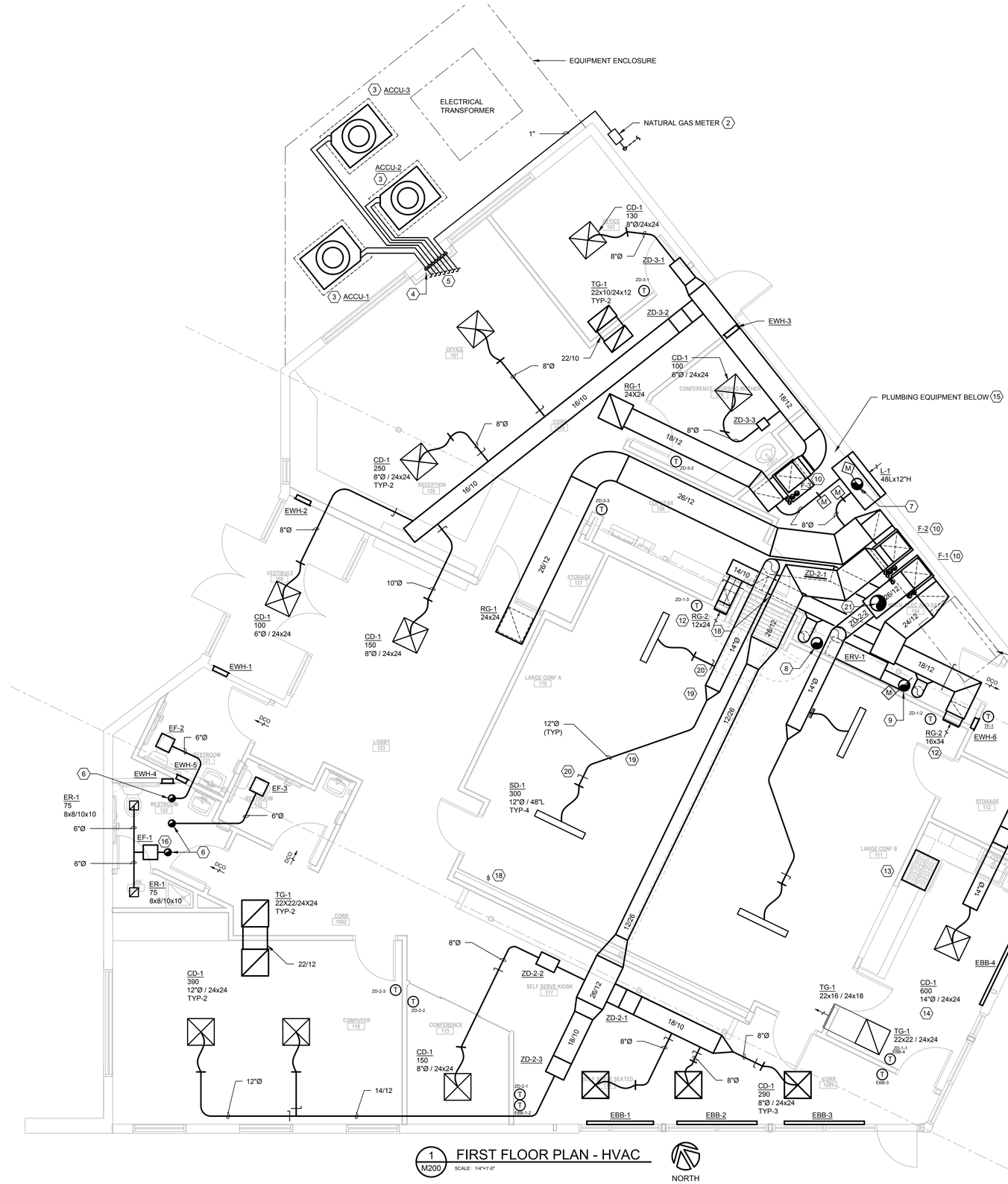
M101



1 M200 FIRST FLOOR PLAN - HVAC

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

NORTH

KEYED NOTES:

1. DO NOT INSTALL ANY DUCT OR PIPING ABOVE ELECTRICAL PANELS. MAINTAIN ALL CODE REQUIRED CLEARANCES IN FRONT OF ALL ELECTRICAL PANELS.
2. NEW / RELOCATED NATURAL GAS METER. 2# LEAVING METER GAS PRESSURE. 360 MBH GAS LOAD ON METER.
3. AIR COOLED CONDENSER ON GRADE. PROVIDE CONCRETE EQUIPMENT PAD FOR UNIT. PROVIDE ALL REQUIRED REFRIGERANT PIPING VALVES AND ACCESSORIES AT UNIT FOR A COMPLETE OPERATING SYSTEM. SIZE PIPING PER MANUFACTURERS REQUIREMENTS. PROVIDE GRADE MOUNTED RACKED PIPE SUPPORT FOR REFRIGERANT PIPING. SUPPORTS SHALL CONSIST OF SYNTHETIC MATERIAL WITH RUST PREVENTIVE COATING SECURELY SUPPORTING PIPING FROM GRADE.
4. REFRIGERANT AND NATURAL GAS PIPING TO RISE FROM FLOOR LEVEL THRU CEILING INTO ATTIC SPACE.
5. REFRIGERANT AND NATURAL GAS PIPING TO CONTINUE IN ATTIC FROM THIS LOCATION TO MECHANICAL ROOM. SEE M201 FOR CONTINUATION.
6. 6"Ø EXHAUST DUCT UP THRU ROOF TO ATTIC SPACE. SEE M201 FOR CONTINUATION.
7. 10"Ø OUTSIDE AIR DUCT TO RISE OFF TOP OF PLENUM INTO ATTIC SPACE. SEE M201 FOR CONTINUATION. INSULATE WITH 1-1/2" FIBERGLASS BLANKET WITH FSK JACKET.
8. 10"Ø OUTSIDE AIR DUCT TO DROP FROM ATTIC SPACE TO ERV-1. SEE M201 FOR CONTINUATION.
9. ERV-1 10"Ø EXHAUST DUCT TO RISE UP INTO ATTIC SPACE. SEE M201 FOR CONTINUATION.
10. AT EACH FURNACE:
    - ROUTE COMBUSTION AIR INTAKE AND VENT UP THRU CEILING TO ATTIC. SEE M201.
    - PROVIDE COOLING COIL CONDENSATE TRAP. ROUTE CONDENSATE TO FLOOR DRAIN.
    - ROUTE COMBUSTION AIR CONDENSATE TO FLOOR DRAIN.
    - PROVIDE REFRIGERANT SUCTION AND LIQUID LINES FROM ATTIC TO DX COIL. SEE M201.
    - PROVIDE NATURE GAS SHUT-OFF VALVE, REGULATOR (2# TO UNIT OPERATING PRESSURE) AND DIRT LEG.
    - FLEXIBLE CONNECTION ON BOTH SUPPLY AIR AND RETURN AIR CONNECTIONS.
    - SEE DETAILS ON M900 FOR ADDITIONAL REQUIREMENTS.
11. FAN CONTROLS VIA REVERSE ACTING THERMOSTAT.
12. BOTTOM OF GRILLE 8" ABOVE FINISHED FLOOR.
13. RECIRCULATING RANGE HOOD PROVIDED BY OWNER, INSTALLED BY HC.
14. KITCHEN IS USED FOR WARMING ONLY. NO COMMERCIAL COOKING OR GREASE PRODUCING COOKING
15. ROUTE 3/4" GAS(2#) TO GAS WATER HEATER. PROVIDE GAS REGULATOR (76 MBH), ON SHUT-OFF AND DRT LEG.
16. PROVIDE CEILING ACCESS PANEL FOR EF ACCESS. TURN OVER TO GC FOR INSTALLATION.
17. CONTROL PANELS FOR F-1, F-2, F-3 AND ERV-1 STACKED ON WALL.
18. ERV-1 "NORMAL" / "ASSEMBLY" VENTILATION AIR SWITCH.
19. SUPPLY DUCT TO RISE AND DROP, FOLLOWING CONTOUR OF CEILING.
20. LOCATE DAMPER IN ACCESSIBLE LOCATION THRU CEILING.
21. 14"Ø SUPPLY DUCT INTO ATTIC SPACE. SEE M201.
22. 14"Ø SUPPLY DUCT FROM ATTIC SPACE. SEE M201.

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DRAWING
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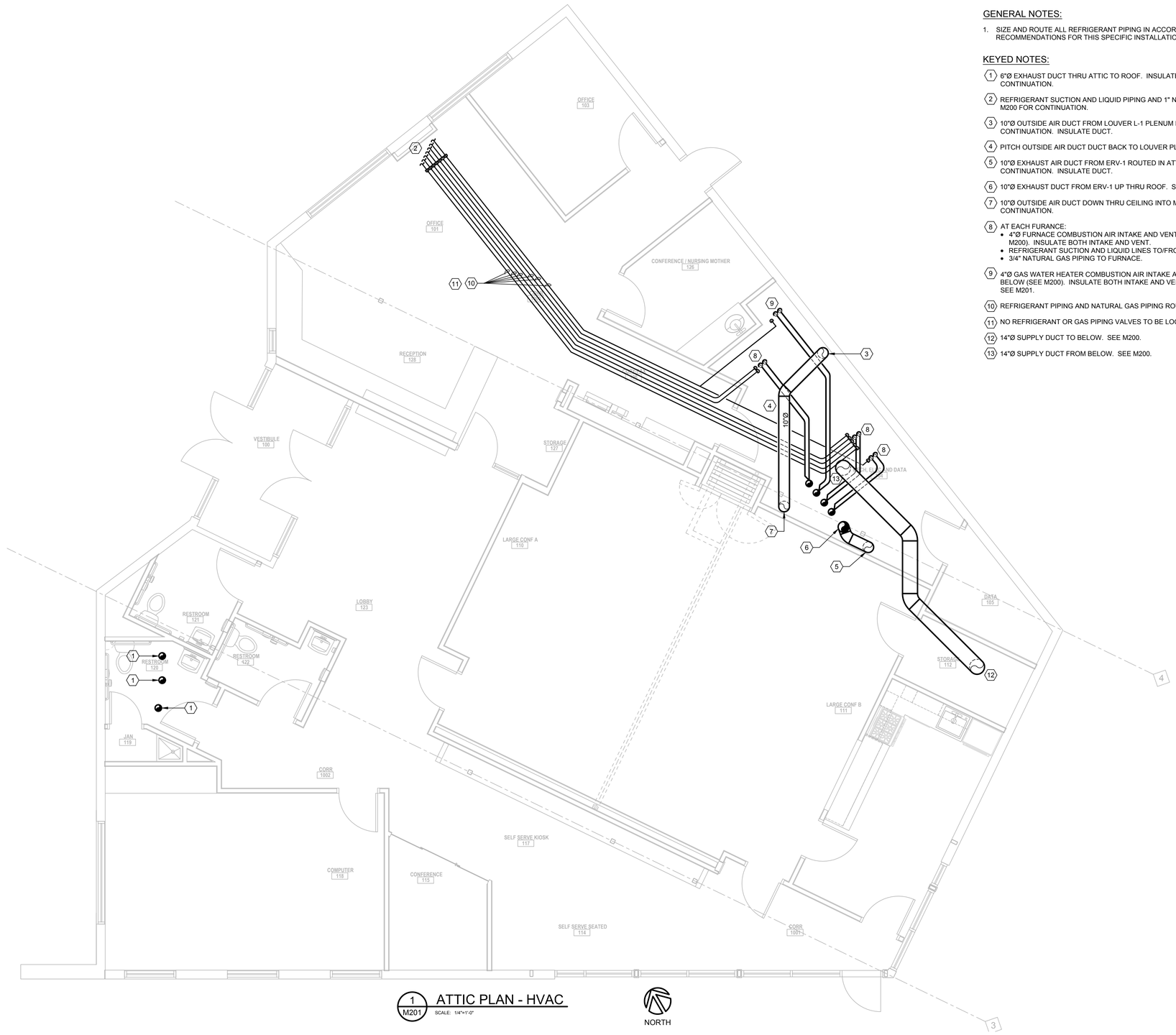
M200



1 M201 ATTIC PLAN - HVAC

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

NORTH

GENERAL NOTES:

1. SIZE AND ROUTE ALL REFRIGERANT PIPING IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS FOR THIS SPECIFIC INSTALLATION.

KEYED NOTES:

1. 6"Ø EXHAUST DUCT THRU ATTIC TO ROOF. INSULATE DUCT. SEE M200 AND M202 FOR CONTINUATION.
2. REFRIGERANT SUCTION AND LIQUID PIPING AND 1" NATURAL GAS PIPE ROUTED IN ATTIC. SEE M200 FOR CONTINUATION.
3. 10"Ø OUTSIDE AIR DUCT FROM LOUVER L-1 PLENUM ROUTED IN ATTIC. SEE M200 FOR CONTINUATION. INSULATE DUCT.
4. PITCH OUTSIDE AIR DUCT DUCT BACK TO LOUVER PLENUM.
5. 10"Ø EXHAUST AIR DUCT FROM ERV-1 ROUTED IN ATTIC. SEE M200 FOR CONTINUATION. INSULATE DUCT.
6. 10"Ø EXHAUST DUCT FROM ERV-1 UP THRU ROOF. SEE M202 FOR CONTINUATION.
7. 10"Ø OUTSIDE AIR DUCT DOWN THRU CEILING INTO MECHANICAL ROOM. SEE M200 FOR CONTINUATION.
8. AT EACH FURANCE:
   - 4"Ø FURNACE COMBUSTION AIR INTAKE AND VENT FROM MECHANICAL ROOM BELOW (SEE M200). INSULATE BOTH INTAKE AND VENT.
   - REFRIGERANT SUCTION AND LIQUID LINES TO/FROM UNIT DX COIL.
   - 3/4" NATURAL GAS PIPING TO FURNACE.
9. 4"Ø GAS WATER HEATER COMBUSTION AIR INTAKE AND VENT FROM MECHANICAL ROOM BELOW (SEE M200). INSULATE BOTH INTAKE AND VENT. 3/4" NATURAL GAS PIPING TO UNIT. SEE M201.
10. REFRIGERANT PIPING AND NATURAL GAS PIPING ROUTED IN ATTIC.
11. NO REFRIGERANT OR GAS PIPING VALVES TO BE LOCATED IN ATTIC SPACE.
12. 14"Ø SUPPLY DUCT TO BELOW. SEE M200.
13. 14"Ø SUPPLY DUCT FROM BELOW. SEE M200.

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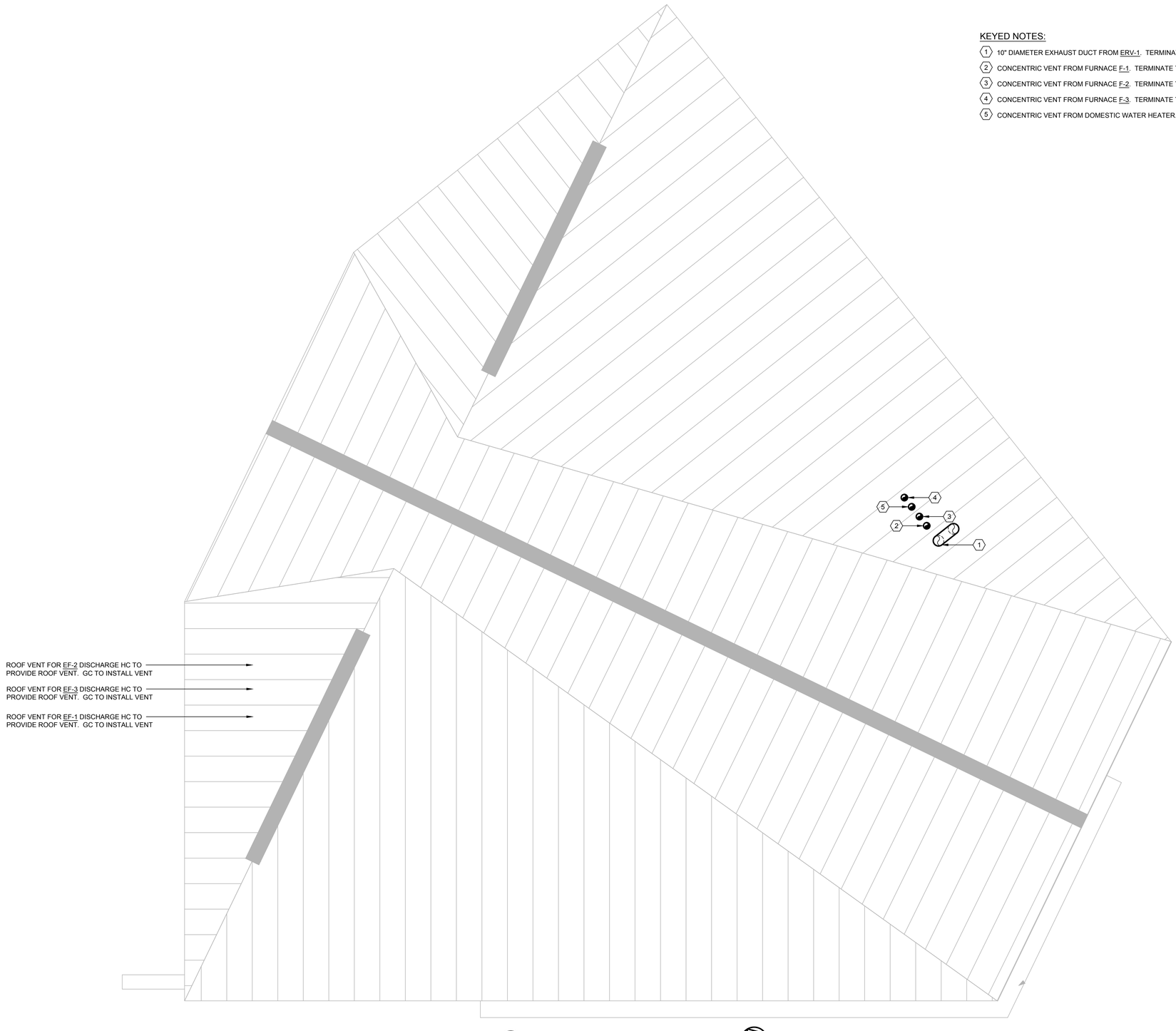

ROOF VENT FOR EF-2 DISCHARGE HC TO PROVIDE ROOF VENT. GC TO INSTALL VENT

ROOF VENT FOR EF-3 DISCHARGE HC TO PROVIDE ROOF VENT. GC TO INSTALL VENT

ROOF VENT FOR EF-1 DISCHARGE HC TO PROVIDE ROOF VENT. GC TO INSTALL VENT

KEYED NOTES:

1. 10" DIAMETER EXHAUST DUCT FROM ERV-1. TERMINATE WITH GOOSENECK.
2. CONCENTRIC VENT FROM FURNACE F-1. TERMINATE THRU ROOF.
3. CONCENTRIC VENT FROM FURNACE F-2. TERMINATE THRU ROOF.
4. CONCENTRIC VENT FROM FURNACE F-3. TERMINATE THRU ROOF.
5. CONCENTRIC VENT FROM DOMESTIC WATER HEATER. TERMINATE THRU ROOF.

1 M202 ROOF PLAN - HVAC

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

NORTH

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MADISON, WI 53711
PH: 608.277.1728 FAX: 608.271.7046
JDR PROJECT NO. 16.0139

ISSUE

PROJECT
PARK EDGE / PARK RIDGE
EMPLOYMENT CENTER

1233 McKENNA BLVD
MADISON, WI 53719
Contract No. 8213 / Munis
No. 10066

PROJECT NO.
16010-00

DRAWING
ROOF PLAN - HVAC

DATE
05.15.18

M202

ELECTRIC WALL HEATER SCHEDULE

UNIT NO.	EWH-1	EWH-2	EWH-3	EWH-4	EWH-5	EWH-6
SERVICE	100 - VEST	100 - VEST	1000 - CORR	120 - RSTRM	121 - RSTRM	105 - IT
MANUFACTURER	QMARK	QMARK	QMARK	QMARK	QMARK	QMARK
MODEL NO.	AWH3150F	AWH3150F	AWH3150F	CWH1101DSF	CHW1101DSF	CHW1101DSF
CAPACITY (BTU / HR)	5,120	5,120	5,120	3,413	3,413	3,413
KW INPUT	1.5	1.5	1.5	1.0	1.0	1.0
VOLTS / PHASE	120 / 1	120 / 1	120 / 1	120 / 1	120 / 1	120 / 1
RECESS (IN)	YES	YES	YES	YES	YES	YES
REMARKS						

ELECTRIC BASEBOARD SCHEDULE

UNIT NO.	EBB-1	EBB-2	EBB-3	EBB-4
LOCATION	114	114	114	113
MANUFACTURER	QMARK	QMARK	QMARK	QMARK
MODEL NO.	CPH-05A	CPH-05A	CPH-05A	CPH-05A
LENGTH (IN)	60	72	72	72
DENSITY (WATTS / FT)	188	188	188	188
CAPACITY (BTU / HR)	3208	3840	3840	3840
KW INPUT	0.94	1.125	1.125	1.125
VOLTS / PHASE	208 / 1	208 / 1	208 / 1	208 / 1
REMARKS	1, 2	1, 2	1, 2	1, 2

KEYED NOTES:

1. PROVIDE WITH INTEGRAL DISCONNECT SWITCH AND CONTROL TRANSFORMER.
2. SEE SPECIFICATIONS FOR UNIT CONTROL.

ZONE CONTROL DAMPER SCHEDULE

UNIT NO.		ZD-1-1	ZD-1-2	ZD-1-3	ZD-2-1	ZD-2-2	ZD-2-3	ZD-3-1	ZD-3-2	ZD-3-3
SERVICE		F-1	F-1	F-1	F-2	F-2	F-2	F-3	F-3	F-3
LOCATION		112	111	111	114	114	114	103	1000	126
SIZE (IN)		14" DIA	14" DIA	14" DIA	18x10	8" DIA	18x10	8" DIA	16x10	8" DIA
MAX PD (IN WC)		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
AIR FLOW (CFM)	MAXIMUM	600	600	600	870	150	790	130	750	100
	MINIMUM	200	200	200	260	50	630	40	225	30
REMARKS										

LOUVER SCHEDULE

UNIT NO.	L-1				
SERVICE	OA INTAKE				
AIRFLOW (CFM)	630				
SIZE (W x H)	48" x 12"				
FREE AREA (FT²)	1.4				
FREE AREA VELOCITY (FPM)	450				
STATIC PRESSURE (IN WC)	0.05				
REMARKS					

AIR DEVICE SCHEDULE

EG - 1 (3) — THROW (IF OTHER THAN NORMAL)
22x22 / 24x24 — NECK / FACE SIZE
300 — UNIT NUMBER
CFM

SG = SUPPLY GRILLE
RG = RETURN GRILLE
EG = EXHAUST GRILLE
SD = SLOT DIFFUSER
CD = CEILING DIFFUSER
TG = TRANSFER GRILLE

UNIT NO.	CD-1	ER-1	RG-1	SD-1	TG-1		
SERVICE	SUPPLY	EXHAUST	RETURN	SUPPLY	TRANSFER		
MANUFACTURER	TITUS	TITUS	TITUS	TITUS	TITUS		
MODEL NO.	OMNI-AA	350 FL	350FL	TBDI-30	350FL		
FACE STYLE	PLAQUE	LOUVERED	LOUVERED	SLOT	LOUVERED		
PATTERN	4-WAY	35 DEG	35 DEG	SLOT	35 DEG		
FINISH	WHITE	WHITE	WHITE	WHITE	WHITE		
MATERIAL	ALUM	ALUM	ALUM	STEEL	ALUM		
SIZE (FACE/NECK)	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS		
CFM RANGE	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS	SEE PLANS		
MOUNTING	LAY-IN	SURFACE	LAY-IN	LAY-IN	LAY-IN		
DAMPER	NO	YES	NO	NO	NO		
REMARKS	-	-		1	-		

GENERAL NOTES:

1. CONTRACTOR SHALL VERIFY MOUNTING SURFACE / FRAME REQUIREMENTS.
2. BRANCH DUCT SIZE TO DIFFUSER SHALL BE THE NECK SIZE OF THE DIFFUSER UNLESS NOTED OTHERWISE.
3. SEE SPECIFICATION FOR DEVICE FINISHES.
4. MAXIMUM STATIC PRESSURE DROP THROUGH DEVICE SHALL NOT EXCEED 0.1" WC.
5. MAXIMUM NC LEVEL THOUGH DEVICE SHALL NOT EXCEED 25
6. UNLESS THROW IS NOTED OTHERWISE, ALL DIFFUSERS SHALL BE 4-WAY THROW.

NOTES:

1. PLENUM SLOT DIFFUSER. PROVIDE INSULATED PLENUM. 48" LONG. 12" DIA INLET. FOUR 1" SLOTS. UNIT MOUNTED IN CEILING. SURFACE MOUNTED (VERIFY MOUNTING REQUIREMENTS). FURNISH PRIMED FOR FIELD FINISH.

FAN SCHEDULE

SF = SUPPLY FAN EF = EXHAUST FAN CF = CEILING (DESTRATIFICATION) FAN REF = ROOF EXHAUST FAN
RF = RETURN FAN TF = TRANSFER FAN CEF = CEILING EXHAUST FAN

UNIT NO.		EF-1	EF-2	EF-3	TF-1	
LOCATION		120	121	122	105	
MANUFACTURER		GREENHECK	GREENHECK	GREENHECK	GREENHECK	
MODEL NO.		CSP-200	CSP-B110	CSP-B110	SPA-250	
SERVICE		TOILET/JC	TOILET	TOILET	DATA	
FAN TYPE		CEILING	CEILING	CEILING	CEILING	
ARRANGEMENT		IN-LINE	CEILING MNT	CEILING MNT	CEILING MNT	
DESIGN CFM		150	75	75	160	
EXT. SP (IN WC)		0.40	0.40	0.40	0.50	
FAN WHEEL TYPE		-	-	-	-	
FAN DIAMETER		-	-	-	-	
APPROXIMATE FAN RPM		900	950	950	900	
BHP		-	-	-	-	
MOTOR TYPE		ECM	ECM	ECM	ECM	
MOTOR HP		58 WATT	80 WATT	80 WATT	70 WATT	
VOLTS/PHASE		120 / 1	120 / 1	120 / 1	120 / 1	
DRIVE		DIRECT	DIRECT	DIRECT	DIRECT	
TWO SPEED		NO	NO	NO	NO	
VFD		NO	NO	NO	NO	
MAX. SONES		2.0	2.0	2.0	4.0	
MAX FAN INLET AIR SOUND DATA SOUND POWER BY OCTAVE BAND (dB)	1	-	-	-	-	
	2	-	-	-	-	
	3	-	-	-	-	
	4	-	-	-	-	
	5	-	-	-	-	
	6	-	-	-	-	
	7	-	-	-	-	
	8	-	-	-	-	
REMARKS		1	1	1	2	

KEYED NOTES

1. FAN TO INCLUDE GRAVITY BACKDRAFT DAMPER. PROVIDE ROOF JACK FOR FAN DISCHARGE. FAN TO BE CONTROLLED WITH SPACE LIGHTING.
2. FAN TO BE CONTROLLED VIA LINE VOLTAGE REVERSE ACTING THERMOSTAT.

FURNACE SCHEDULE

UNIT NO.		F-1	F-2	F-3
MANUFACTURER		CARRIER	CARRIER	CARRIER
MODEL		59MN	59MN	59MN
SERVICE		LARGE CONF	BLDG-SOUTH	BLDG-NORTH
LOCATION		104 - MECH	104 - MECH	104 - MECH
SUPPLY FAN	SUPPLY CFM	1,800	1,800	980
	MIN. OA CFM	375	180	75
	EXT. SP (IN WG)	1.0	1.0	1.0
	SUPPLY FAN HP	-	-	-
	SUPPLY FAN TYPE	ECM	ECM	ECM
COOLING COIL	EAT DB / WB (°F)	76.1 / 64.0	76.1 / 63.3	75.6 / 63.0
	LAT DB / WB (°F)	55.0 / 54.0	55.0 / 54.0	56.0 / 55.5
	SENSIBLE CAP. (MBH)	33.7	41.21	23.9
	TOTAL CAP. (MBH)	44.0	52.64	32.6
	MAX. FACE VELOCITY (FPM)	500	500	500
	MAX. AIR PD (IN WG)	-	-	-
	REFRIGERANT TYPE	R-410A	R-410A	R-410A
HEATING DATA	FUEL TYPE	NAT. GAS	NAT. GAS	NAT. GAS
	EAT / LAT (°F)	60.0 / 98.0	59.7 / 95.0	61.6 / 98.0
	MIN. MBH INPUT	100	120	60
	MIN. MBH OUTPUT	98	117	59
	MINIMUM EFFICIENCY (%)	96	96	96
	CAPACITY STAGES	MODULATING	MODULATING	MODULATING
	MIN / MAX GAS INPUT PRESSURE	7" - 14"	7" - 14"	7" - 14"
FILTER TYPE		PLEATED	PLEATED	PLEATED
FILTER EFFICIENCY		MERV 8	MERV 8	MERV 8
VOLTAGE / PHASE		120 / 1	120 / 1	120 / 1
MIN. CIRCUIT AMPS		14.8	14.8	14.8
MOCP		20	20	20
UNIT WEIGHT (LBS)		-	-	-
REMARKS				
AIR COOLED CONDENSING UNIT	UNIT NO.	ACCU-1	ACCU-2	ACCU-1
	MANUFACTURER	CARRIER	CARRIER	CARRIER
	MODEL	24ANB	24ANB	24ANB
	SERVICE	F-1	F-2	F-3
	NOMINAL TONS	4	5	3
	MINIMUM EFFICIENCY (SEER)	21	21	21
	AMBIENT TEMP (°F)	95.0	95.0	95.0
	REFRIGERANT TYPE	R-410A	R-410A	R-410A
	# OF COMPRESSORS	1	1	1
	STAGES OF CAPACITY	2	2	2
	HOT GAS BYPASS	NO	NO	NO
	VOLTAGE / PHASE	208 / 1	208 / 1	208 / 1
	MINIMUM CIRCUIT AMPS	29.2	38.7	21.1
	MOCP	40	60	30
	WEIGHT (LBS)	-	-	-
REMARKS				

ENERGY RECOVERY VENTILATOR SCHEDULE

UNIT NO.		ERV-1			
SERVICE		F-1			
LOCATION		104 - MECH			
MANUFACTURER		RENEWAIRE			
MODEL NO.		EV450IN			
SUMMER RECOVERY EFFICIENCY (%)		61			
WINTER RECOVERY EFFICIENCY (%)		70			
SUPPLY AIR DATA	AIRFLOW (CFM)	360			
	EXT. SP (IN WG)	0.675			
	TOTAL SP (IN WG)	-			
	EAT / EWB (°F) SUMMER	93 / 75			
	LAT / LWB (°F) SUMMER	80 / 68			
	EAT (°F) WINTER	-15			
	LAT (°F) WINTER	48			
	FILTER	MERV 8			
	FAN RPM	-			
	FAN VFD	NO			
	MOTOR TYPE	ECM			
	BHP	-			
	HP	0.5			
EXHAUST AIR DATA	AIRFLOW (CFM)	375			
	EXT. SP (IN WG)	0.675			
	TOTAL SP (IN WG)	-			
	EAT / EWB (°F) SUMMER	75 / 63			
	LAT / LWB (°F) SUMMER	-			
	EAT (°F) WINTER	70			
	LAT (°F) WINTER	-			
	FILTER	MERV 8			
	FAN RPM	-			
	FAN VFD	NO			
	MOTOR TYPE	ECM			
	BHP	-			
	HP	0.5			
ELEC. DATA	VOLT/PHASE	120 / 1			
	MCA	10.1			
	MOCP	15			
UNIT WEIGHT (LBS)		-			
REMARKS		1, 2			

KEYED NOTES:

1. PROVIDE WITH LOW-LEAKAGE DAMPERS ON OUTSIDE AIR AND EXHAUST DUCT, FUSED DISCONNECTS, DUCT TRANSITION KITS.
2. UNIT SHALL HAVE TWO MODES OF OPERATION. "STANDARD" MODE, BALANCE UNIT TO 75 CFM. "ASSEMBLY" MODE, BALANCE UNIT TO 360 CFM.

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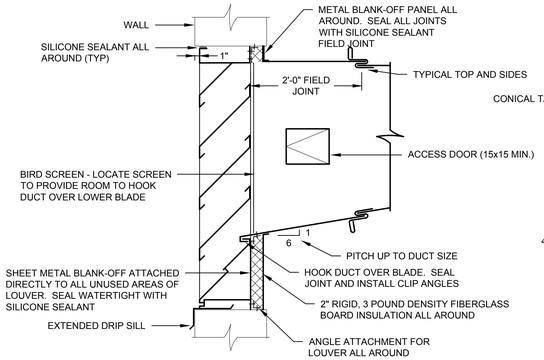
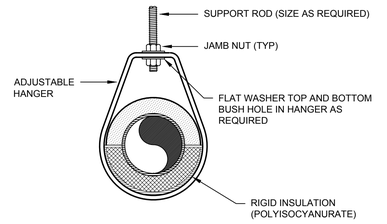


NOTE: ALL DUCT JOINTS, CORNERS AND SEAMS SHALL BE SEALED WITH SILICONE SEALANT OR SOLDERED LEAK TIGHT.

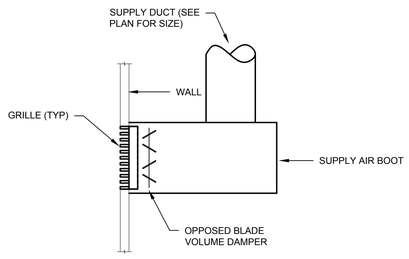
12 M900 LOUVER INSTALLATION DETAIL

SCALE: NONE



13 M900 TYPICAL PIPE SUPPORT DETAIL

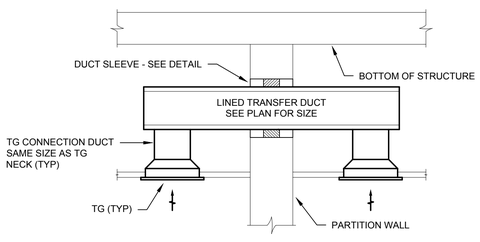
SCALE: NONE



NOTE: PAINT ALL VISIBLE INTERIOR SURFACES OF DUCTWORK FLAT BLACK.

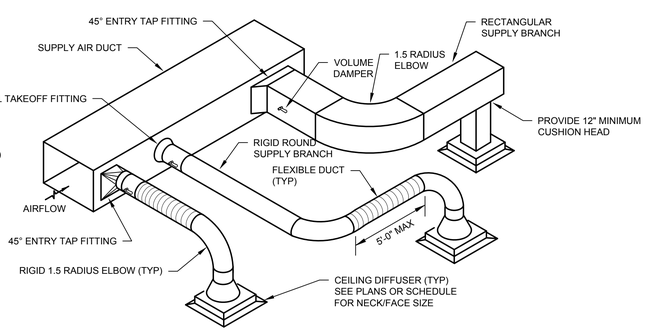
14 M900 GRILLE CONNECTION DETAIL

SCALE: NONE



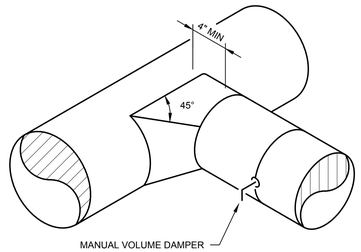
15 M900 TRANSFER DUCT DETAIL

SCALE: NONE



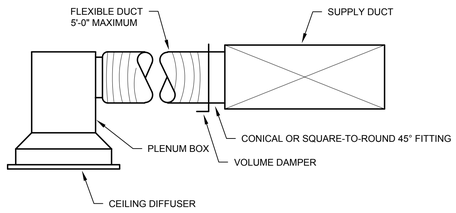
8 M900 BRANCH DUCT & DIFFUSER CONNECTION

SCALE: NONE



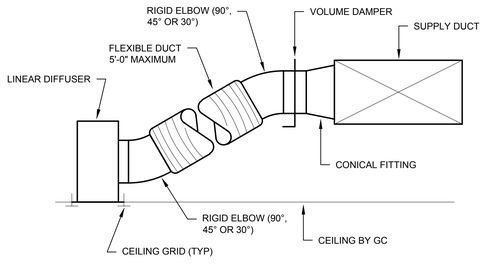
9 M900 BRANCH DUCT TAKEOFF DETAIL

SCALE: NONE



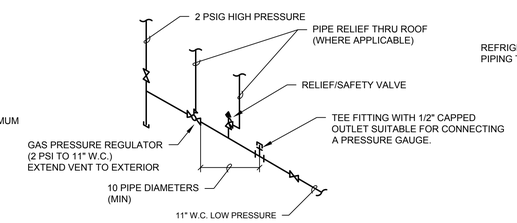
10 M900 CEILING DIFFUSER CONNECTION DETAIL

SCALE: NONE



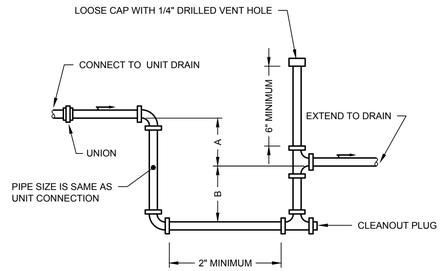
11 M900 LINEAR DIFFUSER CONNECTION DETAIL

SCALE: NONE



4 M900 GAS PRESSURE REGULATOR DETAIL

SCALE: NONE

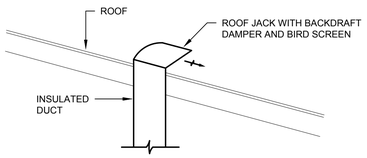


BLOW-THRU
A = MINIMUM (1/2)(B)
B = FAN TOTAL SP + 1"

DRAW-THRU
A = FAN NEGATIVE SP + 1"
B = MINIMUM (1/2)(A)

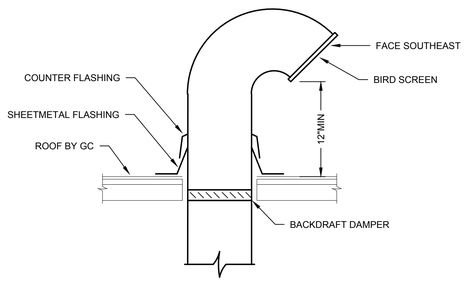
5 M900 LOOP SEAL FOR COOLING COIL CONDENSATE DRAIN

SCALE: NONE



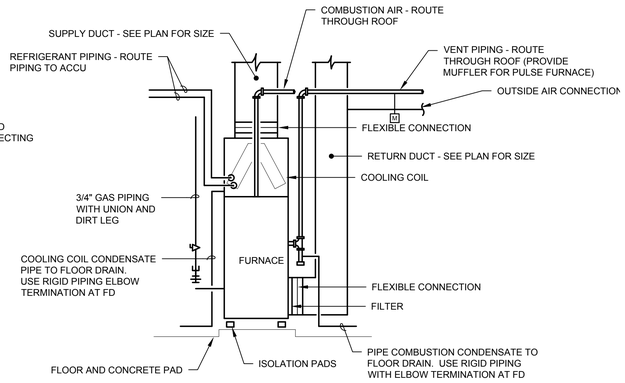
6 M900 ROOF JACK PLENUM

SCALE: NONE



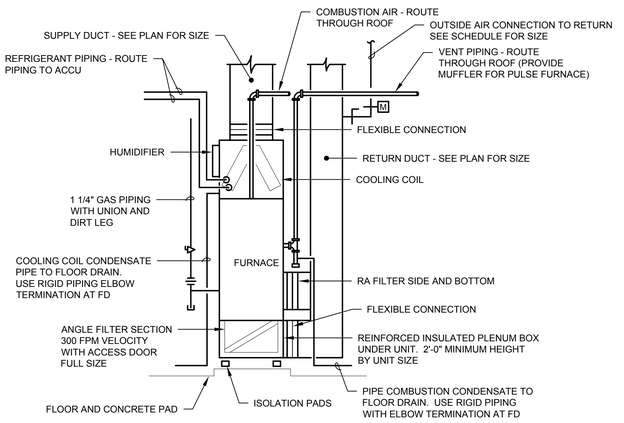
7 M900 GOOSENECK DETAIL

SCALE: NONE (ERV-1 EA)



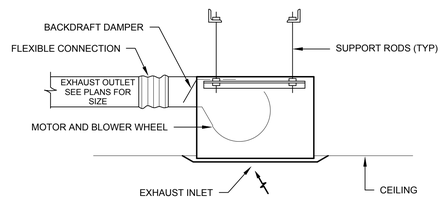
1 M900 SEALED COMBUSTION FURNACE

SCALE: NONE (F-3)



2 M900 SEALED COMBUSTION FURNACE

SCALE: NONE (F-1 AND F-2)



NOTE: VERTICAL DISCHARGE WHERE INDICATED ON DRAWINGS.

3 M900 CEILING MOUNTED EXHAUST FAN

SCALE: NONE

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