HVAC DEMOLITION NOTES:

1. COORDINATE WITH ARCHITECTURAL PLANS FOR EXACT AREAS TO BE DEMOLISHED.
2. REMOVE ALL EQUIPMENT, DUCTWORK AND PIPING AS INDICATED ON PLAN. REMOVALS SHALL INCLUDE ALL SUPPORTS AND HANGERS, HOUSEKEEPING PADS, DAMPERS, VALVES, FITTINGS, CONTROLS AND ASSOCIATED LOW VOLTAGE WIRING, AND ANY OTHER ASSOCIATED ACCESSORIES WHICH PERTAIN TO THE EQUIPMENT TO BE REMOVED.
3. REMOVAL OF ALL POWER CONNECTIONS TO DEMOLITION ITEMS SHALL BE BY THE E.C.
4. ANY DISCREPANCIES BETWEEN THE DEMOLITION PLANS AND ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER. ANY DEMOLITION WORK WHICH MAY BE QUESTIONABLE DUE TO UNFORESEEN FIELD CONDITIONS SHALL NOT BE REMOVED UNTIL REVIEWED BY THE ARCHITECT, ENGINEER OR BUILDING FACILITIES MANAGER.
5. DEMOLITION WORK SHALL INCLUDE THE PREPARATION OF EXISTING EQUIPMENT FOR CONNECTION TO NEW EQUIPMENT. COORDINATE DEMOLITION WORK WITH THE CONSTRUCTION PLANS.
6. ALL EQUIPMENT REMOVALS SHALL BECOME THE PROPERTY OF THIS CONTRACTOR. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER REMOVAL AND DISPOSAL OF DEMOLITION ITEMS OFF-SITE, UNLESS OTHERWISE NOTED.
7. ALL CUTTING AND PATCHING NECESSARY FOR THE DEMOLITION WORK SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
8. IT SHALL BE THE OWNER'S RESPONSIBILITY TO REMOVE ANY LOOSE EQUIPMENT, FURNITURE, SUPPLIES, ETC. THAT MAY BE LOCATED IN THE AREA OF WORK.
9. THE PLANS ARE INTENDED TO CONVEY THE EXTENT AND SCOPE OF THE DEMOLITION WORK. EVERY ITEM INTENDED FOR REMOVAL MAY NOT BE SHOWN. THE CONTRACTOR IS ADVISED TO SURVEY THE PROJECT SITE BEFORE SUBMITTING A BID FOR DEMOLITION WORK.

GENERAL NOTES:

1. THE DRAWINGS ON THESE PLANS ARE DIAGRAMMATIC. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL HVAC WORK WITH OTHER TRADES AND THE BUILDING STRUCTURE. NO EXTRA PAYMENTS WILL BE AUTHORIZED FOR REROUTING OR REMOVAL OF INSTALLED WORK DUE TO LACK OF COORDINATION WITH OTHER SYSTEMS.
2. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF HIS WORK.
3. ACCESS PANELS SHALL BE PROVIDED IN CEILINGS, WALLS, FLOORS, ETC., AS REQUIRED TO MAINTAIN ACCESSIBILITY TO DAMPERS, ETC.
4. PROVIDE DUCT ACCESS DOORS AT ALL MOTORIZED DAMPERS, FIRE DAMPERS, AND SMOKE DAMPERS.
5. ALL PENETRATIONS THROUGH FIRE RATED PARTITIONS SHALL BE SEALED FIRE AND SMOKE TIGHT WITH AN APPROPRIATE U.L. LISTED FIRESTOPPING MATERIAL AND OR SYSTEM.
6. ALL DUCTWORK PASSING THROUGH A FIRE RATED PARTITION SHALL BE PROVIDED WITH A FIRE DAMPER TO MAINTAIN THE FIRE RATING OF THE PARTITION.
7. LOCATIONS OF DIFFUSERS AND GRILLES ARE APPROXIMATE. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS.
8. ALL BRANCHES AND TAKE-OFFS SHALL BE EQUIPPED WITH VOLUME CONTROL DAMPERS. DAMPERS TO BE OPPOSED BLADE TYPE, 4" MAX. BLADE HEIGHT. VOLUME DAMPERS TO BE LOCATED AS NEAR TO THE POINT OF TAKE-OFF AS PRACTICAL.
9. FLEXIBLE DUCT CONNECTIONS SHALL BE LIMITED TO A MAXIMUM LENGTH OF FIVE (5) FEET AND SUPPORTED AT MID-POINT.
10. ALL SUPPLY & RETURN AIR DUCTWORK SHALL BE INSULATED.
11. PROVIDE SHUT-OFF VALVES AT ALL PIPING BRANCH TAKE-OFFS AND AT ALL CONNECTIONS TO EQUIPMENT.
12. PROVIDE DRAINS WITH HOSE ADAPTERS AND CAPS ON PIPING AT ALL LOW POINTS. PROVIDE MANUAL VENTS ON PIPING AT ALL HIGH POINTS.
13. COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL CONTRACTOR.
14. ALL MOTOR STARTERS SHALL BE FURNISHED BY THE HVAC CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
15. ALL REQUIRED CONTROL EQUIPMENT AND WIRING SHALL BE FURNISHED & INSTALLED BY THE HVAC CONTRACTOR.
16. THE TERMS "PROVIDE" OR "FURNISH", AS USED ON THESE PLANS, INDICATE THAT THE CONTRACTOR IS TO FURNISH AND INSTALL THE REFERENCED EQUIPMENT OR SYSTEMS IN THEIR ENTIRETY AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
17. CONTRACTOR SHALL PROVIDE AND INSTALL ALL COMPONENTS INDICATED ON DETAIL SHEETS, PLANS, SPECIFICATIONS AND ALL PERTINENT EQUIPMENT REQUIRED FOR A COMPLETE AND WORKABLE SYSTEM.
18. CONTRACT CLOSE OUT: IN THE PRESENCE OF THE OWNER, ENGINEER OR ARCHITECT; DEMONSTRATING OPERATION OF SYSTEMS AND THAT ALL SPECIFICATIONS HAVE BEEN MET TO THE SATISFACTION OF ALL PARTIES.
19. IT IS THE INTENTION THAT THESE SPECIFICATIONS, AND DRAWINGS ACCOMPANYING SAME, SHALL PROVIDE FOR THE FURNISHING AND INSTALLING OF THE () SYSTEMS COMPLETE AS SPECIFIED AND SHOWN. ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS OR VICE VERSA, OR ANY WORK CHANGES WHICH MAY BE EVIDENTLY NECESSARY TO COMPLETE THE INSTALLATION SHALL BE FURNISHED BY THIS CONTRACTOR.
20. IT IS THE INTENT AND PURPOSE OF THESE SPECIFICATIONS AND DRAWINGS TO INCLUDE AND PROVIDE FOR ALL MATERIALS, APPLIANCES AND LABOR TO PROPERLY COMPLETE AND LEAVE IN PERFECT WORKING CONDITION THE ENTIRE SYSTEM HEREINAFTER SPECIFIED. ANY MATERIAL, LABOR OR APPLIANCE NOT SPECIFICALLY MENTIONED IN THESE SPECIFICATIONS OR SHOWN ON THE DRAWINGS, BUT NECESSARY FOR A COMPLETE INSTALLATION MUST BE FURNISHED BY THIS CONTRACTOR.
21. IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS TO PROVIDE ALTERATIONS AND/OR NEW CONSTRUCTION AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS TO PROVIDE COMPLETE NEW SYSTEMS IN EVERY RESPECT, CAPABLE OF OPERATING AS DESIGNED. IT IS NOT INTENDED THAT EVERY FITTING, MINOR DETAIL OR FEATURE BE SHOWN ON DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DETAIL NECESSARY FOR COMPLETION OF THESE SYSTEMS IN ACCORDANCE WITH GOOD PRACTICE.

HVAC LINE TYPES

- —/—/—/— or - - - - - - - - EXISTING EQUIPMENT/DUCT TO BE REMOVED
- ——————— EXISTING EQUIPMENT/DUCT TO REMAIN
- ——————— NEW EQUIPMENT / DUCT
- ———CHR——— CHILLED WATER RETURN
- ———CHS——— CHILLED WATER SUPPLY
- ———HWR——— HOT WATER RETURN
- ———HWS——— HOT WATER SUPPLY

DUCTWORK SYMBOLS

- AxB — DUCTWORK DOUBLE LINE REPRESENTATION: "A" INDICATES DUCT WIDTH; "B" INDICATES DUCT DEPTH.
- AxB — DUCTWORK SINGLE LINE REPRESENTATION: "A" INDICATES DUCT WIDTH; "B" INDICATES DUCT DEPTH.
- SUPPLY AIR DUCT UP
- SUPPLY AIR DUCT DOWN
- RETURN AIR DUCT UP
- RETURN AIR DUCT DOWN
- EXHAUST AIR DUCT UP
- EXHAUST AIR DUCT DOWN
- SUPPLY AIR FLOW
- RETURN/EXHAUST AIR FLOW
- VOLUME DAMPER
- VOLUME DAMPER
- MOTORIZED DAMPER w/ ACCESS DOOR
- FIRE DAMPER W/ ACCESS DOOR
- SUPPLY AIR TERMINAL
- RETURN/EXHAUST AIR TERMINAL
- EXHAUST AIR TERMINAL
- D — DROP DUCT
- R — RISE DUCT

PIPING SYMBOLS

- DIRECTION OF FLOW
- TOP CONNECTION, 45° OR 90°
- BOTTOM CONNECTION, 45° OR 90°
- SIDE CONNECTION
- CAPPED OUTLET
- PIPE DOWN TURN
- PIPE RISE

VALVE SYMBOLS

- GATE VALVE – THREADED/FLANGED
- GATE VALVE WITH 3/4" HOSE ADAPTER
- GLOBE VALVE – THREADED/FLANGED
- CHECK VALVE
- STRAINER
- WYE STRAINER (WITH BALL VALVE & HOSE CONNECTION)
- STRAINER WITH VALVED DRAIN AND QUICK-COUPLE HOSE CONNECTOR
- FLEXIBLE CONNECTION
- ANGLE GLOBE VALVE
- BUTTERFLY VALVE
- BALL VALVE
- CONTROL VALVE (CV) – FLOAT-OPERATED
- MODULATING CONTROL VALVE
- MODULATING CONTROL BUTTERFLY VALVE
- TWO POSITION CONTROL VALVE
- THREE-WAY MODULATING CONTROL VALVE
- THREE-WAY TWO POSITION CONTROL VALVE
- PRESSURE REGULATING VALVE
- PRESSURE REDUCING VALVE (PRV)
- TEMPERATURE & PRESSURE RELIEF VALVE
- SAFETY OR PRESSURE RELIEF VALVE
- AUTOMATIC BALANCING CONTROL VALVE
- WATER BALANCE DEVICE
- WATER FLOW MEASURING DEVICE
- CIRCUIT SETTER VALVE
- GATE VALVE WITH GLOBE-VALVED BYPASS
- TRIPLE DUTY VALVE
- (LC) WATER LEVEL CONTROLLER
- (M) FLOW METER
- COMBINATION BALANCING AND SHUT-OFF VALVE
- MANUAL AIR VENT
- TEST PLUG (PRESSURE/TEMPERATURE)
- PLUG VALVE
- LUBRICATED PLUG VALVE

GENERAL SYMBOLS

- POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK
- POINT OF DISCONNECT
- X / XX — INDICATES SECTION LETTER / INDICATES DRAWING NUMBER WHERE LOCATED
- XXX / XXX — INDICATES TYPE OF AIR OUTLET / INDICATES AIR FLOW REQUIREMENTS
- 2A / T — WALL MOUNT THERMOSTAT 'A' DESIGNATES COMPONENT SERVED

ABBREVIATIONS

AC	AIR CONDITIONING UNIT
ACT	ACOUSTIC CEILING TILE
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AF	AFTER FILTER
AFF	ABOVE FINISHED FLOOR
AFM	AIR FLOW MEASURING DEVICE
AHU	AIR HANDLING UNIT
A.L.D.	AUTOMATIC LOUVER DAMPER (PNEUMATIC)
AP	ACCESS PANEL
BDD	BACK DRAFT DAMPER
BG	BOTTOM GRILLE (WALL TYPE)
BR	BOTTOM REGISTER (WALL TYPE)
BTUH	BRITISH THERMAL UNITS/HOUR
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CG	CEILING GRILLE
CLG	CEILING
CO	CLEAN OUT
CP	CONDENSATE PUMP
CR	CEILING REGISTER
CUH	CABINET UNIT HEATER
CW	COLD WATER
D	DRAIN
Db	DRY BULB TEMPERATURE, °F
dB	DECIBELS
DN	DOWN
DP	DIFFERENTIAL PRESSURE
Dp	DEW POINT TEMPERATURE, °F
DS	DUCT SMOKE DETECTOR
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMP
E.C.	ELECTRICAL CONTRACTOR
ECC	ENGINEERING CONTROL CENTER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EGW	ETHYLENE GLYCOL-WATER SOLUTION
EMD	END OF MAIN DRIP (STEAM)
ERC	ENERGY RECOVERY COIL
ERP	ELECTRIC RADIANT CEILING PANEL
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EXIST	EXISTING
F.A.I.	FRESH AIR INTAKE
FC	FLEXIBLE CONNECTION
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLR	FLOOR
F.O.R.	FUEL OIL RETURN
F.O.S.	FUEL OIL SUPPLY
FPC	FIRE PROTECTION CONTRACTOR
F/SD	COMBINATION FIRE/SMOKE DAMPER
FTR	FIN TUBE RADIATION
G	NATURAL GAS PIPE
G.C.	GENERAL CONTRACTOR
GH	GRAVITY HOOD
GPM	GALLONS PER MINUTE
H.C.	HVAC CONTRACTOR
HF	HEPA FILTER
HP	HORSEPOWER
HRP	HYDRONIC RADIANT CEILING PANEL
HV	HEATING AND VENTILATING UNIT
IV	INLET VANES
LCD	LINEAR CEILING DIFFUSER
LFD	LAMINAR FLOW DIFFUSER
LF	LINEAR FEET
LPG	LP GAS PIPING
LPR	LOW PRESSURE STEAM CONDENSATE
LPS	LOW PRESSURE STEAM
LBS/HR	POUNDS PER HOUR
MB	MIXING BOX
MD	MOTORIZED DAMPER
MER	MECHANICAL EQUIPMENT ROOM
MAX.	MAXIMUM
MBH	ONE THOUSAND BTUH
MIN.	MINIMUM
NOM.	NOMINAL
OA	OUTSIDE AIR
P	PUMP
P.C.	PLUMBING CONTRACTOR
PD	PRESSURE DROP (FEET OF WATER)
PF	PRE-FILTER
PGW	PROPYLENE GLYCOL-WATER SOLUTION
PH	PREHEAT
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE IN.
RA	RETURN AIR
RF	RETURN FAN
RHC	REHEAT COIL
Rh	RELATIVE HUMIDITY
RPZ	REDUCED PRESSURE ZONE
SA	SUPPLY AIR
SD	SMOKE DAMPER
Sp. Gr.	SPECIFIC GRAVITY
SH	STEAM HUMIDIFIER
SP	STATIC PRESSURE
SPD	SPLITTER DAMPER
SPS	STATIC PRESSURE SENSOR
S.S.	STAINLESS STEEL
TG	TOP GRILLE (WALL TYPE)
TR	TOP REGISTER (WALL TYPE)
TWU	THRU WALL UNIT
UH	UNIT HEATER
U.N.O.	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
V	VALVE
VD	VOLUME DAMPER
VE	VOLUME EXTRACTOR
VI	VIBRATION ISOLATOR
VIF	VERIFY IN FIELD
Wb	WET BULB TEMPERATURE, °F
WFM	WATER FLOW MEASURING DEVICE
WMS	WIRE MESH SCREEN

Greenwood Lake Elementary School Ventilation Table

Unit No.	Occupancy Classification	Area (SF)	Occupancy Density	# of Occupants	Corrected # of Occupants	OA (CFM/person)	OA (CFM/ft²)	Uncorrected OA (CFM)	Air Distribution Effectiveness	Final Outdoor Airflow (CFM)	System Airflow (CFM)	Outdoor Air Fraction	EA (CFM/ft²)	Final Exhaust Airflow (CFM)
Restroom (108A)	Toilet Rooms - Public	47.1208	---	---	---	---	---	---	---	---	---	---	50 CFM (CNT)/ 70 CFM (INT)	50 CFM (Continuous)
Janitors Closet (108B)	Toilet Rooms - Public	20.2488	---	---	---	---	---	---	---	---	---	---	50 CFM (CNT)/ 70 CFM (INT)	50 CFM (Continuous)
Kitchen (110)	Kitchens (Cooking)	665	20	13.30	14	7.5	0.12	184.80	0.8	231	1050	0.22	0.7	466

GREENWOOD LAKE
UNION FREE
SCHOOL DISTRICT

SED PROJECT NUMBER
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CAPITAL IMPROVEMENTS

LEGEND

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Checked by	EDF
Project No.	FE# 19-194
Scale	AS NOTED
Date	1-8-21

ERIC D. FELLENZER, P.E.
NY PROFESSIONAL ENGINEER NO. 073084-1

GREENWOOD LAKE
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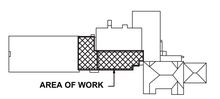
GREENWOOD LAKE ELEMENTARY SCHOOL



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REFERENCE SCALE: 1/8" 1/4" 1/2" 0 1" 2"

Drawing Title

HVAC: SYMBOLS, NOTES, & ABBREVIATIONS

Drawing No.

H-001

File Name: F:\2019\19-194 GWLUFSD Kitchen and Cafeteria Renovations\HVAC\H-001.dwg (Layout: H-001)
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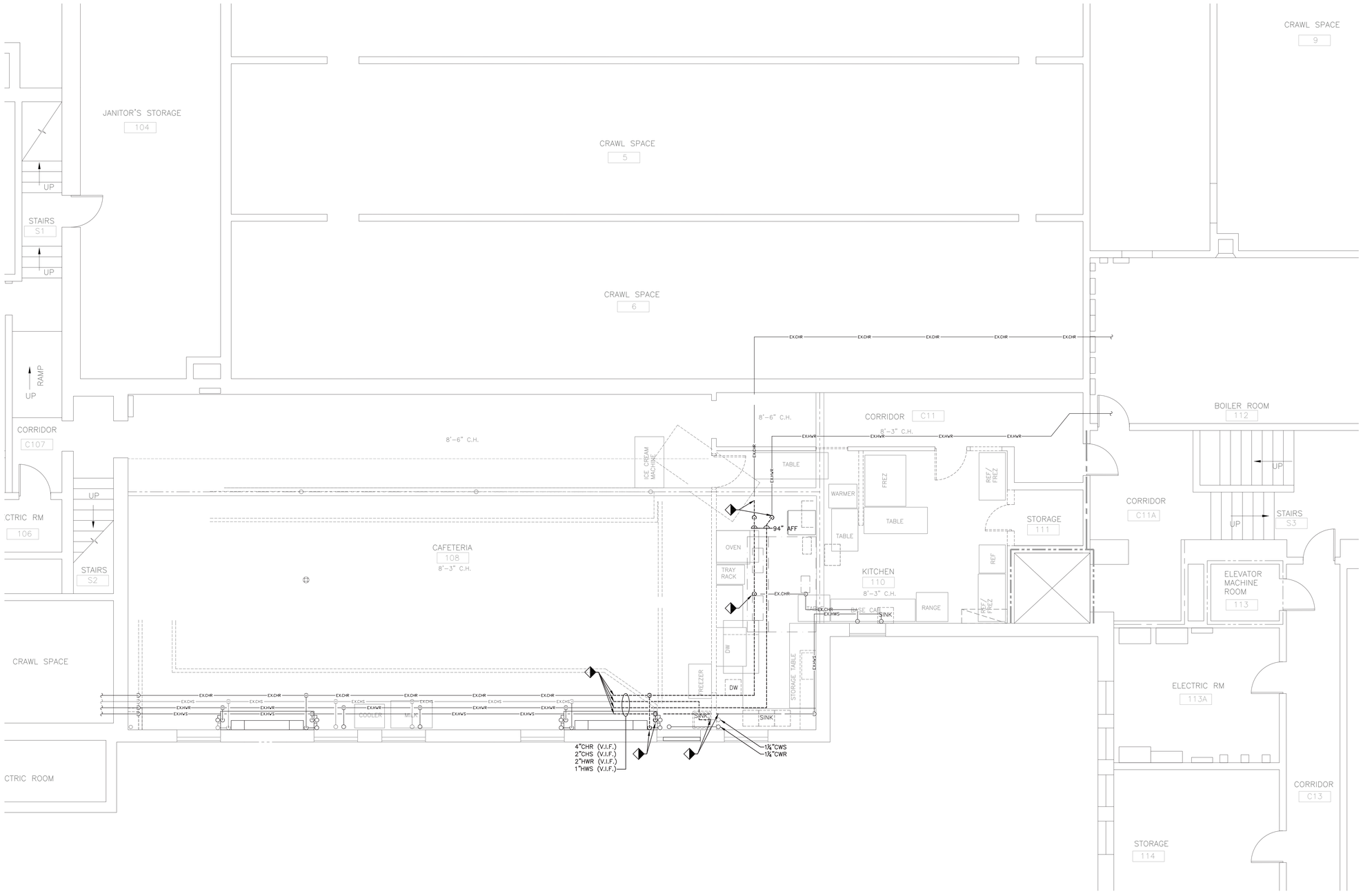

1 HVAC: PARTIAL BASEMENT HYDRONIC PIPING DEMO PLAN

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

File Name: F:\2019\19-194 GWLUFSD Kitchen and Cafeteria Renovations\HVAC\H-100 & HD-100.dwg (Layout: HD-100 DEMO PIPING)
Date: Tue, Dec 28, 2021 - 4:07 PM (Name: wpb)

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KEY PLAN

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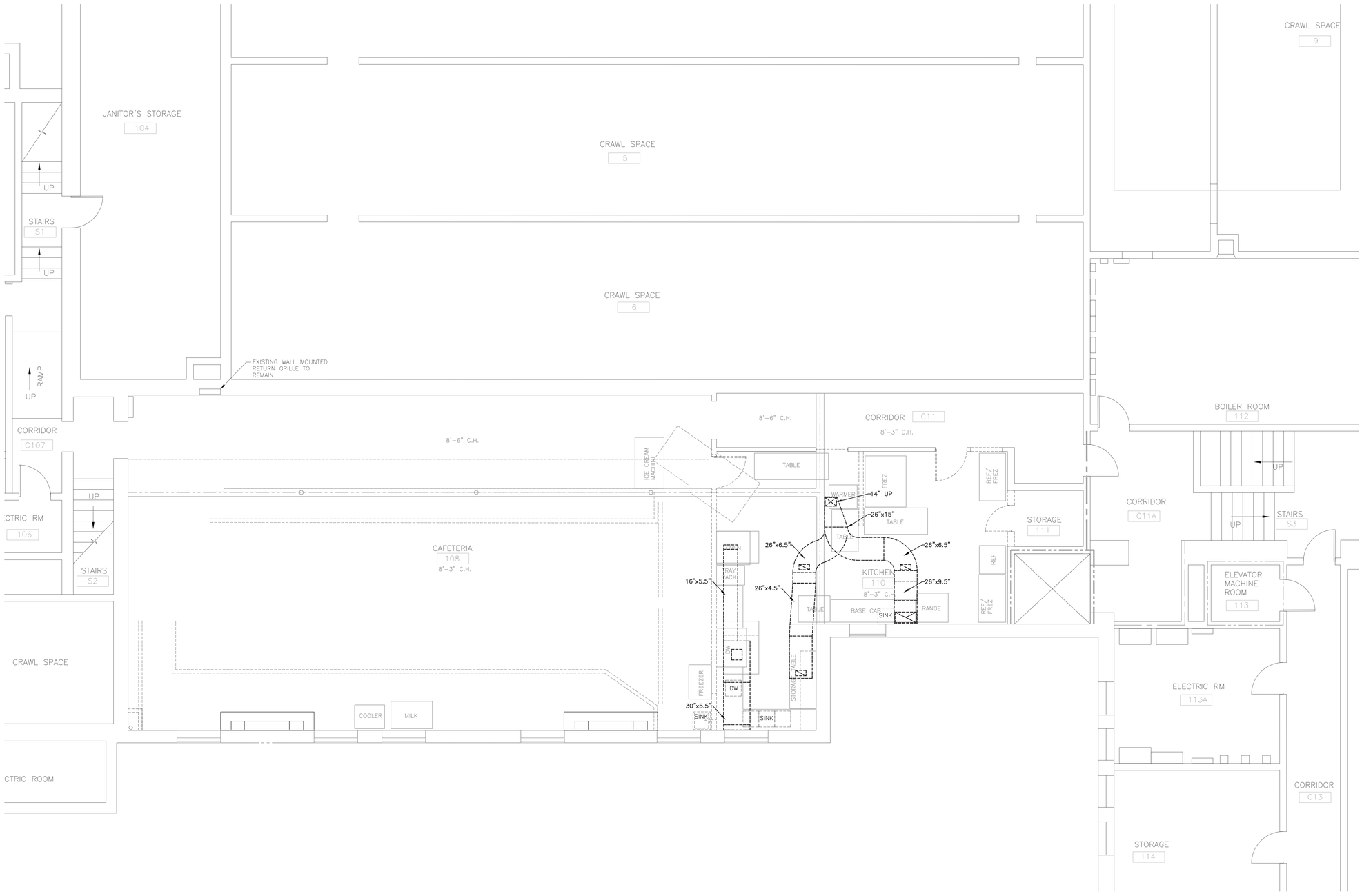
⅛" ¼" ½" 0 1" 2"
REFERENCE SCALE

Drawing Title

HVAC: PARTIAL BASEMENT HYDRONIC PIPING DEMO PLAN

Drawing No.

HD-100



1 HVAC: PARTIAL BASEMENT DUCTWORK DEMO PLAN

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

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REFERENCE SCALE

Drawing Title

HVAC: PARTIAL BASEMENT DUCTWORK DEMO PLAN

Drawing No.

HD-200

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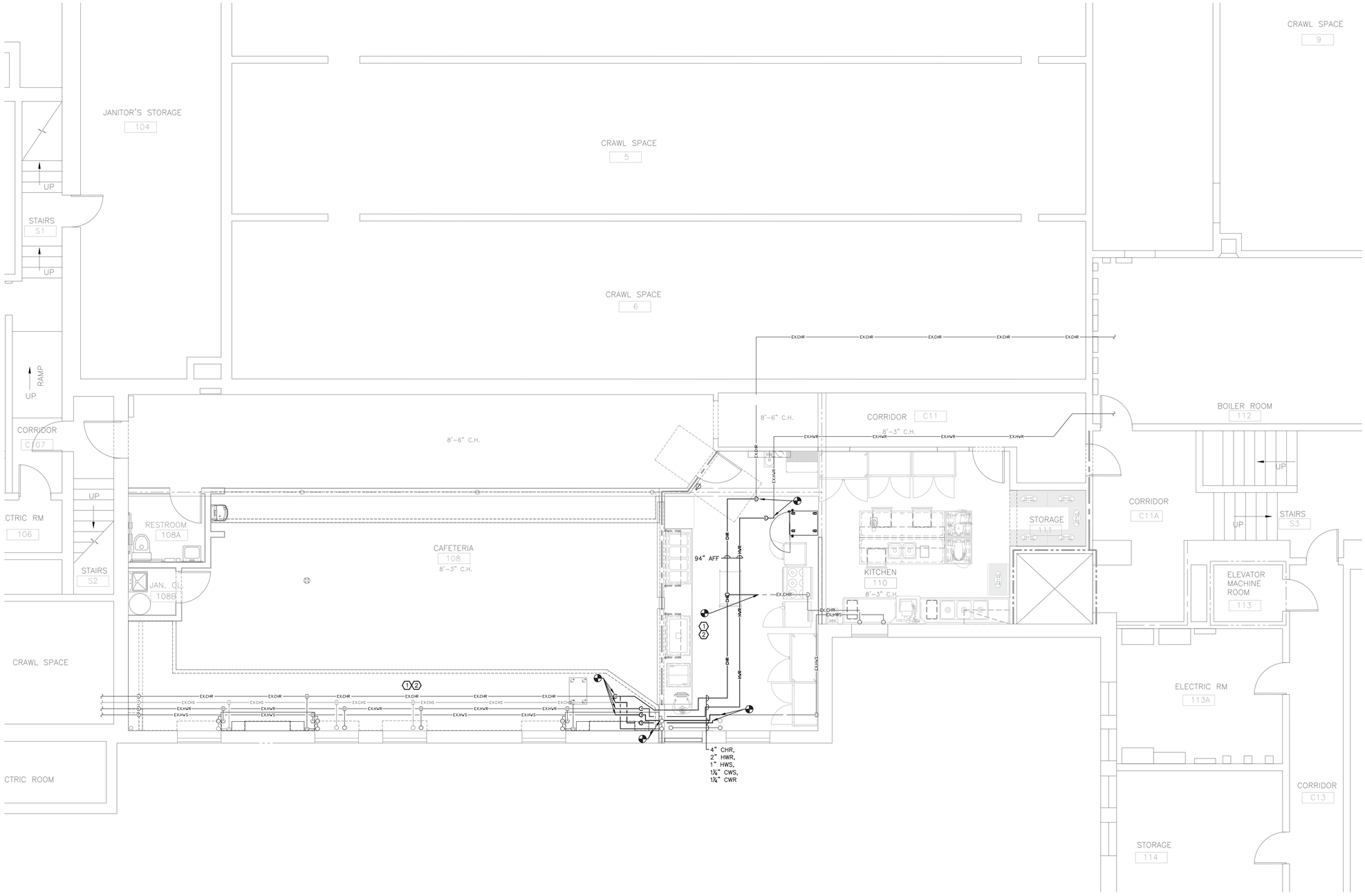

1 HVAC: PARTIAL BASEMENT NEW HYDRONIC PIPING PLAN

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

NOTE:

1. REFER TO PLUMBING DRAWINGS FOR ALL NEW GAS PIPING PLANS.

KEYED NOTES:

(1) PROVIDE ALL NEW PIPING WITH LABELS TO MATCH THE EXISTING CONDITIONS. SEE DETAIL 1/P-701 FOR MORE INFORMATION.

(2) CONTRACTOR TO FIELD VERIFY ALL EXISTING PIPE CONDITIONS PRIOR TO ANY NEW CONSTRUCTION.

File Name: F:\2019\19-194 GWLUFSD Kitchen and Cafeteria Renovations\HVAC\H-100 & HD-100.dwg (Layout: H-100 NEW PIPING)
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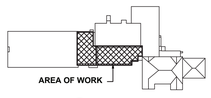

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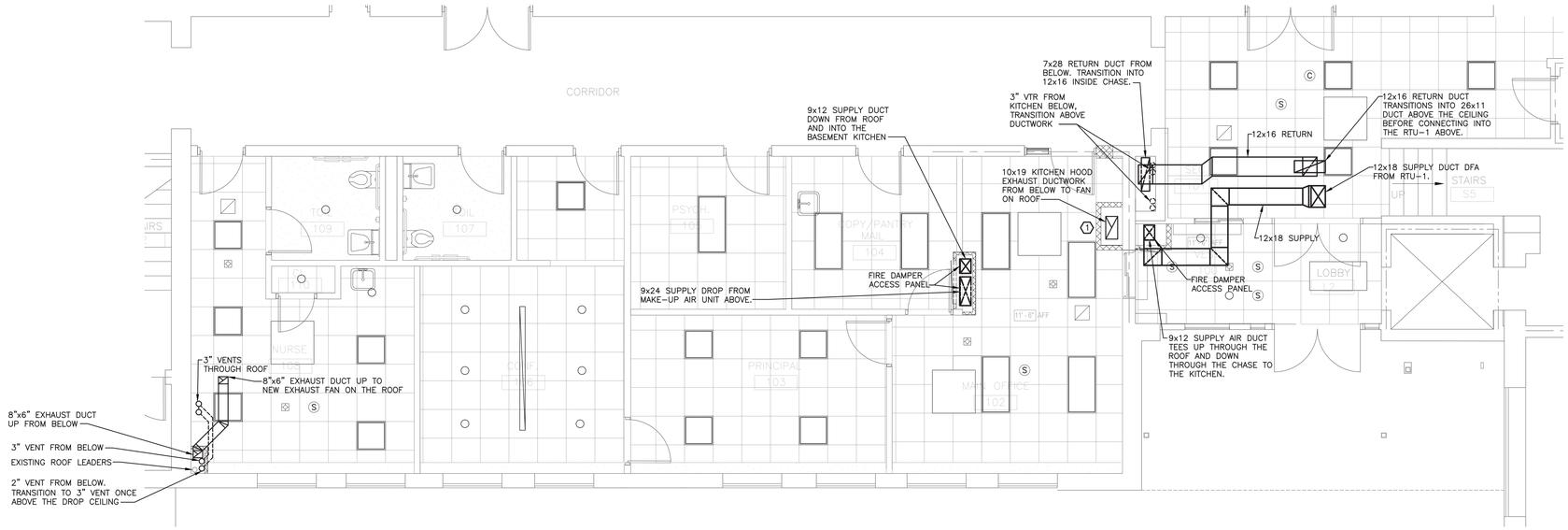
⅛" ¼" ½" 0 1" 2"
REFERENCE SCALE

Drawing Title

HVAC: PARTIAL BASEMENT NEW HYDRONIC PIPING PLAN

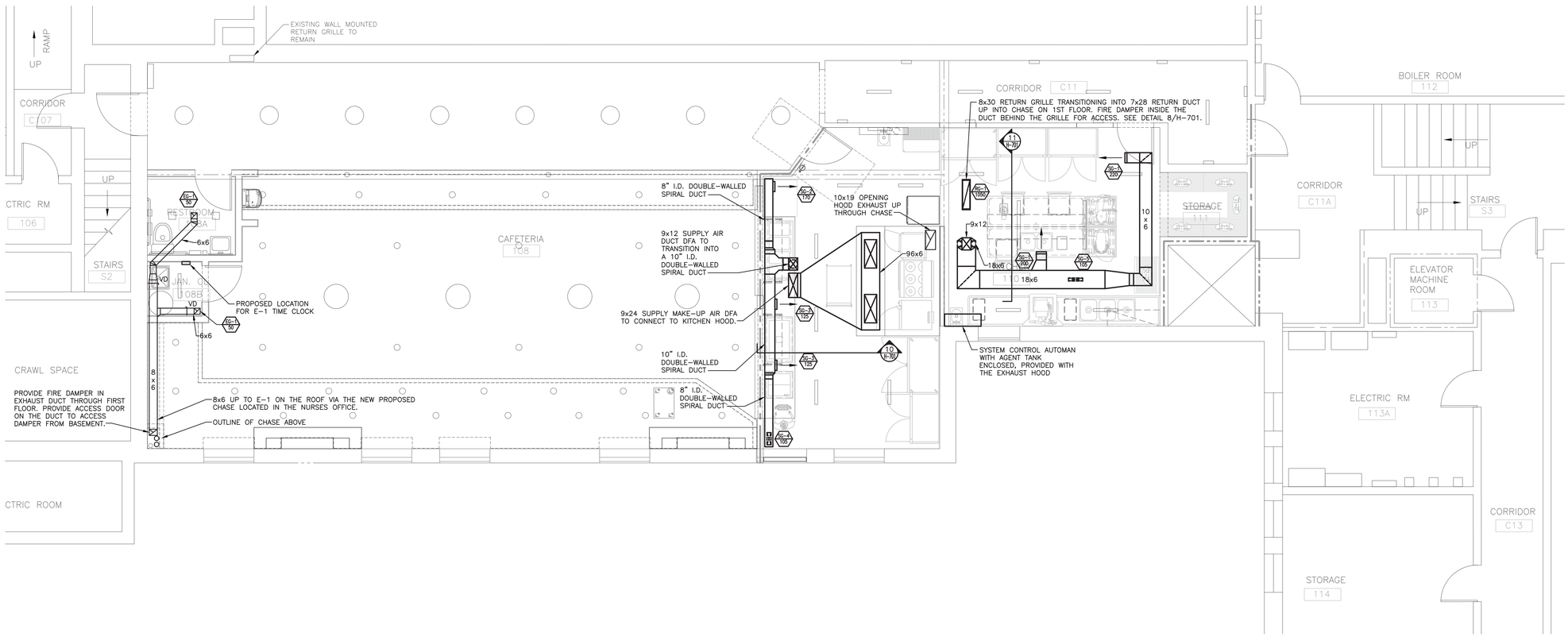
Drawing No.

H-100



2 HVAC: PARTIAL 1ST FLOOR NEW DUCTWORK PLAN

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



1 HVAC: PARTIAL BASEMENT NEW DUCTWORK PLAN

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

KEYED NOTES:

1. RELOCATE DUCTWORK, PIPING, CONDUITS/WIRES ABOVE THE CEILING IN THE PATH OF THE KITCHEN EXHAUST HOOD 19x10 DUCT, TRAVELING FROM THE BASEMENT TO ITS CORRESPONDING EXHAUST FAN ON THE ROOF.

GENERAL NOTE:

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL FINAL CHASE LOCATIONS.

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⅛" ¼" ½" 0 1" 2"
REFERENCE SCALE

Drawing Title

**HVAC:
PARTIAL BASEMENT
NEW DUCTWORK PLAN**

Drawing No.

H-200

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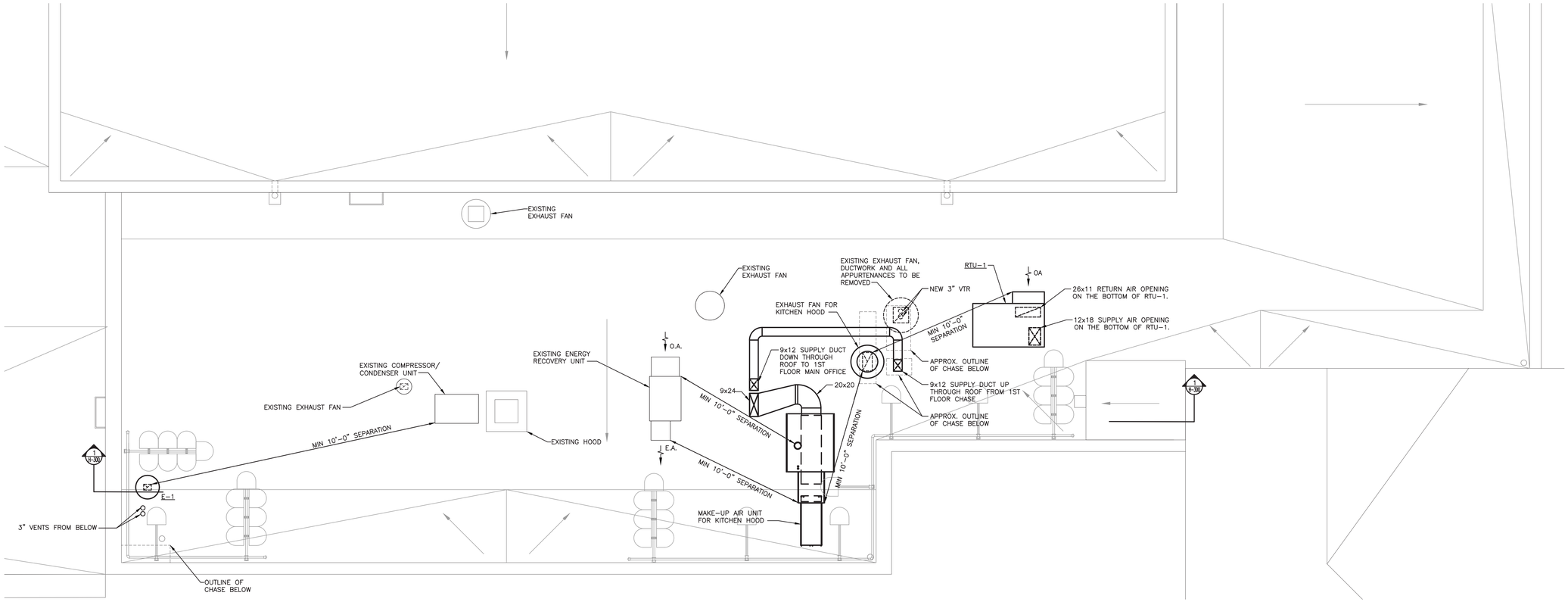
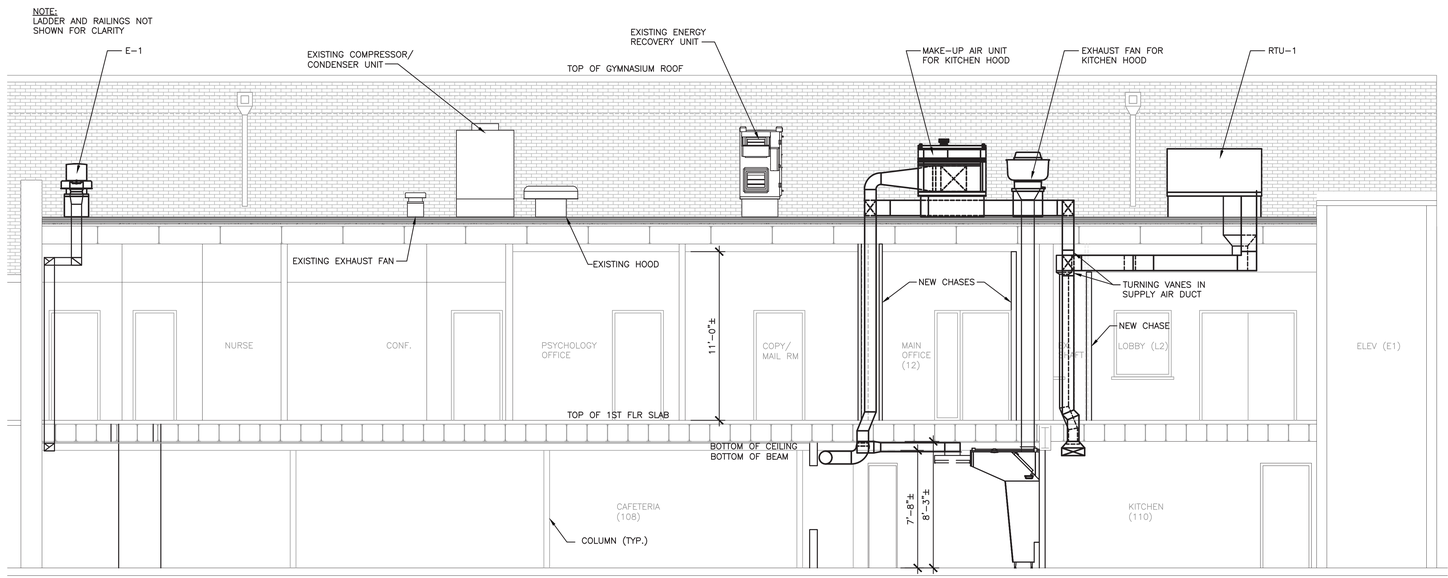


2 PARTIAL ROOF PLAN
SCALE: 1/4" = 1'-0"



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

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CAPITAL IMPROVEMENTS

LEGEND

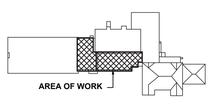
No.	Date	Revisions
	12/29/21	FOR BID

Drawn by	SBL
Checked by	EDF
Project No.	FE# 19-194
Scale	AS NOTED
Date	1-8-21

ERIC D. FELLENZER, P.E.
STATE OF NEW YORK
LICENSED PROFESSIONAL ENGINEER
NY PROFESSIONAL ENGINEER NO. 072084-1

GREENWOOD LAKE
UNION FREE
SCHOOL DISTRICT

GREENWOOD LAKE ELEMENTARY SCHOOL



KEY PLAN

FELLENZER ENGINEERING LLP
FE #: 19-194
www.fellp.com
22 Mulberry St., Suite 2A, Middletown, NY 10940
t 845-343-1481 fx 845-343-4986
181 Church St., Suite 100, Poughkeepsie, NY 12601
t 845-454-9704 fx 855-320-8735

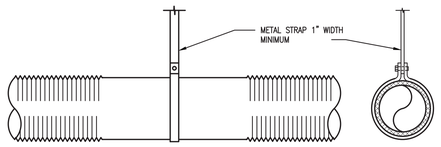
⅛" ¼" ⅜" 0 1" 2"
REFERENCE SCALE

Drawing Title

HVAC:
ROOF PLAN
AND SECTION

Drawing No.

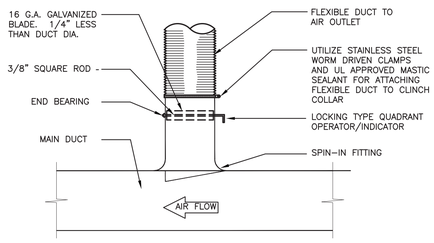
H-300



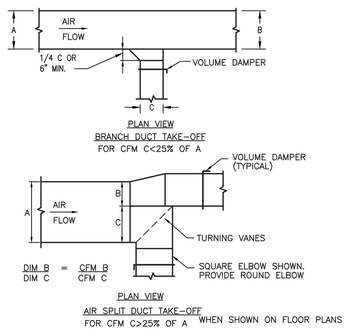
NOTES:

1. DUCT SHOULD EXTEND STRAIGHT FOR A MINIMUM OF 3 DUCT DIAMETERS BEFORE BENDING.
2. SUPPORT SYSTEM MUST NOT BEND DUCT OR CAUSE OUT OF ROUND SHAPE.
3. MAXIMUM SAG 1/2" PER FOOT OR SUPPORT SPACING.
4. 5'-0" MAXIMUM FLEX DUCT LENGTH.

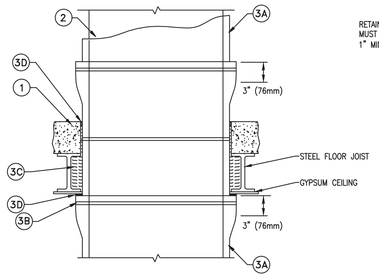
1 FLEX DUCT SUPPORT
N.T.S.



SPIN-IN BRANCH CONNECTION TO SINGLE AIR OUTLET
2 N.T.S.



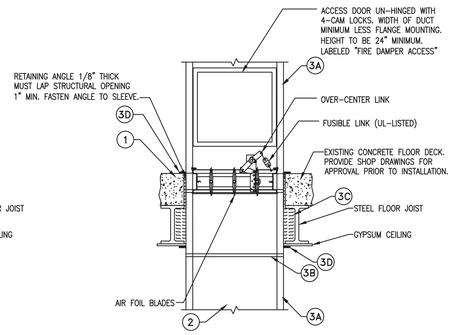
3 SUPPLY DUCTWORK TAKE-OFFS
N.T.S.



1.	Concrete Floor
2.	Kitchen Hood Exhaust Duct
3A.	One Layer 3M Fire Barrier Duct Wrap 15A, Or Approved Equal
3B	Banding or Pinning
3C.	Packing Material
3D.	3M Fire Barrier 1000 N/S, 1003 S/Lor 2000+ Silicone Sealant Or Approved Equal.

System integrity is limited by quality of installation.
Page 10

6 FIRE BARRIER DUCT WRAP FOR KITCHEN HOOD EXHAUST DUCT
N.T.S.



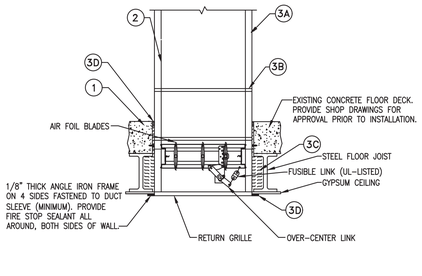
1.	Concrete Floor
2.	Duct
3A.	Duct Insulation (Thickness Per ASHRAE 90.1)
3B	Insulation Joint
3C.	Packing Material
3D.	3M Fire Barrier 1000 N/S, 1003 S/Lor 2000+ Silicone Sealant Or Approved Equal.

System integrity is limited by quality of installation.
Page 10

NOTES:

1. FIRE DAMPER SHALL BE UL APPROVED FOR DUAL DIRECTION AIR FLOW.
2. FIRE DAMPER SHALL BE RATED FOR A MINIMUM OF 4000 FPM AIR VELOCITY AT 8" STATIC PRESSURE.
3. FIRE DAMPER SHALL BE GALVANIZED STEEL CONSTRUCTION.
4. FIRE DAMPER SHALL BE INSTALLED PER MANUFACTURERS INSTRUCTIONS. PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO INSTALLATION.

7 SUPPLY DUCT PENETRATION THROUGH CONCRETE FLOOR
N.T.S.



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2.	Duct
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Page 10

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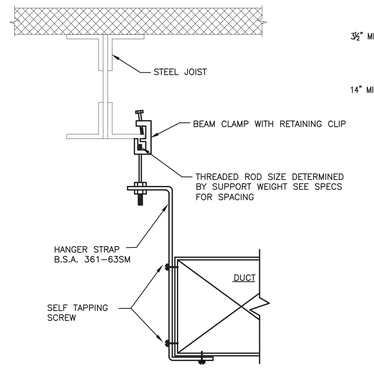
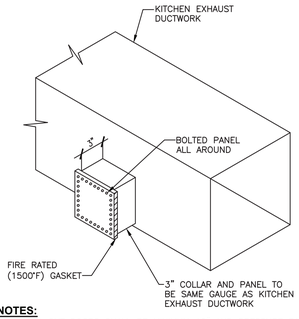
8 RETURN DUCT PENETRATION THROUGH CONCRETE FLOOR
N.T.S.



NOTES:

1. DUCTS SHALL NOT BE HUNG FROM OR SUPPORTED BY HUNG CEILING.
2. FOR DUCTS NOT EXCEEDING 2 SQ. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1/16".
3. FOR DUCTS LARGER THAN 2 SQ. FT. IN CROSS-SECTIONAL AREA, HANGERS SHALL BE OF METAL NOT LESS THAN 1" BY 1/8".
4. FOR ALL DUCTS. HANGERS SHALL BE TURNED UNDER AND FASTENED TO THE BOTTOM OF DUCT AS SHOWN ABOVE.
5. WHERE CROSS-SECTIONAL AREA OF DUCT EXCEEDS 8 SQ. FT., HANGERS SHALL BE NOT MORE THAN 4 FT. ON CENTER.

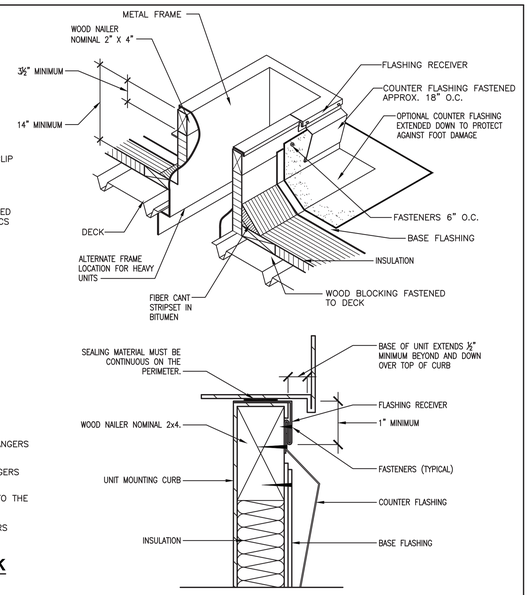
4 METHOD OF HANGING DUCTWORK
N.T.S.



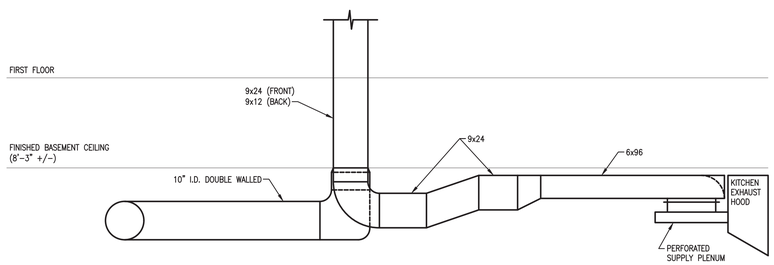
NOTES:

1. CLEAN-OUT DOORS SHALL BE MINIMUM 12" AND PRESSURE RATED, WITH RATED GASKET AND INSTALLED AT EVERY DUCT TURN AND EVERY 20'-0" OF HORIZONTAL RUN.
2. KITCHEN EXHAUST DUCTWORK CONSTRUCTION TO BE 16 GA BLACK IRON STEEL, 18 GA STAINLESS STEEL OR 10 GA. BLACK STEEL IN N.Y.C. WITH ALL WELDED POINTS AND SEAMS.

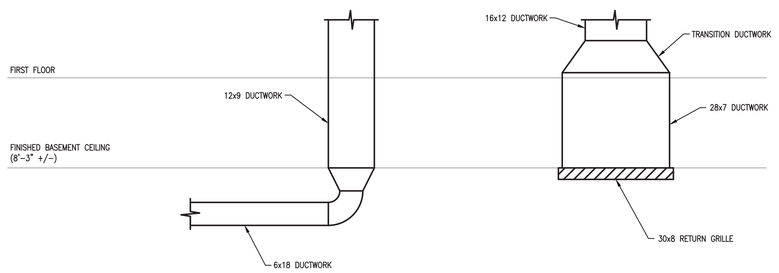
9 CLEANOUT ACCESS PANEL FOR EXHAUST DUCTWORK SYSTEMS
N.T.S.



5 ROOFTOP CURB DETAIL
N.T.S.



10 KITCHEN DUCTWORK SECTION #1
SCALE: 3/4" = 1'-0"



11 KITCHEN DUCTWORK SECTION #2
SCALE: 3/4" = 1'-0"

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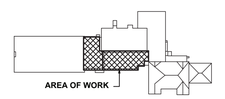
GREENWOOD LAKE ELEMENTARY SCHOOL



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⅛" ¼" ½" 0 1" 2"
REFERENCE SCALE

Drawing Title
HVAC: DETAILS

Drawing No.
H-701

PACKAGED GAS/ELECTRIC ROOFTOP SCHEDULE

ID	LOCATION	AREA AND/OR BLDG SERVED	TYPE	MANU.	MODEL NO.	GENERAL DATA: TOTAL SUPPLY AIR FLOW	GENERAL DATA: MIN. OUTSIDE AIR FLOW	GENERAL DATA: EXT. STATIC PRESSURE	GENERAL DATA: BLOWER STATIC PRESSURE	GENERAL DATA: COOLING DATA: TOTAL CAPACITY	GENERAL DATA: COOLING DATA: EER	GENERAL DATA: COOLING DATA: SEER	GENERAL DATA: HEATING DATA: NUMBER OF STAGES	GENERAL DATA: HEATING DATA: STAGE 1: INPUT/OUTPUT	GENERAL DATA: HEATING DATA: STAGE 2: INPUT/OUTPUT	GENERAL DATA: HEATING DATA: TEMPERATURE RISE	GENERAL DATA: HEATING DATA: AFUE	GENERAL DATA: HEATING DATA: FUEL TYPE	GENERAL DATA: OPERATIONAL WEIGHT W/ ACCESSORIES	GENERAL DATA: OPERATIONAL SOUND LEVEL	UNIT POWER CONNECTION: VOLTAGE	UNIT POWER CONNECTION: PHASE	UNIT POWER CONNECTION: MCA	UNIT POWER CONNECTION: MOCP	REMARKS
RTU-1	MAIN OFFICE ROOF	KITCHEN	PACKAGED ROOFTOP	CARRIER	48GCDM04A3A5-2WSC0	1050 CFM	231	0.29" WC	1.4" WC	35.14 MBH	12	16	2	50 MBH / 40 MBH	67 MBH / 54 MBH	25 F - 55 F	81%	NATURAL GAS	678 LBS.	79 dBA	208	3	24	30	SEE NOTES

NOTES

1. AFUE COLUMN REPRESENTS ANNUAL FUEL UTILIZATION EFFICIENCY.
2. RTU-1 SHALL BE INTEGRATED INTO THE EXISTING BUILDING MANAGEMENT SYSTEM. PROVIDE ALL APPURTENANCES REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. COORDINATE WITH GREENWOOD LAKE CONTROLS CONTRACTOR FOR ALL REQUIREMENTS.
3. PROVIDE UNIT WITH A HIGH STATIC BLOWER.
4. PROVIDE UNIT WITH A ECONOMIZER.
5. PROVIDE UNIT WITH HINGED PANELS.
6. PROVIDE UNIT WITH A 2" THICK MERV 13 THROWAWAY FILTER.
7. PROVIDE UNIT WITH A MANUFACTURER APPROVED ROOF CURB. ROOF CURB MUST BE A MIN. OF 14" OVERALL HEIGHT.

EXHAUST FAN SCHEDULE

I.D.	MANUFACTURER	MODEL NO.	AIRFLOW	GENERAL DATA: TOTAL EXTERNAL S.P.	GENERAL DATA: FAN RPM	GENERAL DATA: POWER USAGE: START UP	GENERAL DATA: POWER USAGE: OPERATING	GENERAL DATA: MOTOR SIZE	GENERAL DATA: SONES	GENERAL DATA: SOUND LEVEL	GENERAL DATA: WEIGHT	ELECTRICAL DATA: VOLTAGE/PHASE	ELECTRICAL DATA: FLA	REMARKS
E-1	GREENHECK	G-097-VG	100 CFM	0.50 " WG	1,135	0.03 BHP	0.03 BHP	1/4 HP	4.6	47 dBA	38 LBS.	115/1	2.85	SEE NOTES

NOTES:

1. PROVIDE UNIT WITH A BACKDRAFT DAMPER, MOTOR STARTER, AND BIRDSCREEN.
2. PROVIDE UNIT WITH A 24 HOUR / 7 DAY TIME CLOCK.

REGISTER & GRILLE SCHEDULE

I.D.	MANUFACTURER	MODEL NO.	AIRFLOW (CFM)	FRAME TYPE	NOMINAL FACE SIZE	BLADE DEFLECTION	BLADE SPACING	FINISH	REMARKS
SG-1	TITUS	271FS	200-220	DUCT MOUNTED	10" x 6"	DOUBLE	3/4"	WHITE	SEE NOTES
SG-2	HART/COOLEY	SVH-3-12X4-W-8	170	DUCT MOUNTED	12" X 4"	DOUBLE	3/4"	WHITE ENAMEL	SEE NOTES
SG-3	HART/COOLEY	SVH-3-10X4-W-10	125	DUCT MOUNTED	10" X 4"	DOUBLE	3/4"	WHITE ENAMEL	SEE NOTES
SG-4	HART/COOLEY	SVH-3-10X4-W-8	125	DUCT MOUNTED	10" X 4"	DOUBLE	3/4"	WHITE ENAMEL	SEE NOTES
SG-5	HART/COOLEY	USVH-3-14X3-W	105	DUCT MOUNTED	14" X 3"	DOUBLE	3/4"	WHITE	SEE NOTES
RG-1	TITUS	56FL	1050	SURFACE MOUNTED	30" x 8"	SINGLE	3/4"	WHITE	SEE NOTES
EG-1	TITUS	56FL	50	SURFACE MOUNTED	6" x 6"	SINGLE	3/4"	WHITE	SEE NOTES

NOTE:

1. ALL FINAL MOUNTING LOCATIONS FOR ALL GRILLES, REGISTERS & DIFFUSERS CAN BE SEEN ON THE ARCHITECTURAL PLANS. ALL LOCATIONS SHOWN ON THE MECHANICAL PLAN ARE TENTATIVE.

INSULATION SCHEDULE

"KNAUF" AS STANDARD OR APPROVED EQUAL

INSIDE BUILDING THERMAL ENVELOPE	FIBERGLASS FLEXIBLE BLANKET, 1.0 LB/CF R=8.0 (INSTALLED @ 25% COMPRESSION)	
SERVICE	FACING	MINIMUM THICKNESS TO MEET ASHRAE 90.1 REQUIREMENTS
SUPPLY/RETURN AIR	FSK	2"
OUTDOOR AIR	FSK	2"
EXHAUST AIR	–	NONE
OUTSIDE BUILDING THERMAL ENVELOPE	FIBERGLASS FLEXIBLE BLANKET, 1.0 LB/CF R=12.0	
SERVICE	FACING	THICKNESS TO EXCEED ASHRAE 90.1 REQUIREMENTS
SUPPLY/RETURN AIR	ASJ	4"

* FLEXIBLE ELASTOMERIC FOAM INSULATION (ARMACELL OR EQUIVALENT)

NOTES:

1. ALL EDGES SHALL BE CLEAN CUT.
2. ALL SEAMS AND BUTT JOINTS SHALL BE ADHERED AND SEALED USING ARMAFLEX 520 ADHESIVE. HORIZONTAL JOINTS SHALL BE AT BOTTOM OF DUCTS & PIPES.
3. ALL EXPOSED END CUTS SHALL BE COATED WITH ARMAFLEX 520 ADHESIVE.
4. INSULATION AT HIGH END OF PIPING RUNS SHALL BE ADHERED DIRECTLY TO THE PIPING USING A 1" STRIP OF 520 ADHESIVE ON THE I.D. OF THE INSULATION AND ON THE PIPE.
5. FOR ALL OUTDOOR EXPOSED DUCTWORK, THE HORIZONTAL SURFACE SHALL BE SLOPED TP PREVENT POUNDING ON SURFACE OF COATED INSULATION (2" MIN.).
6. THE "ARMA TUFF" PLUS SYSTEM MAY BE USED IN LIEU OF EXTERIOR DUCT INSULATION/WEATHER RESISTANT SYSTEM DESCRIBED IN SCHEDULE ABOVE.

MINIMUM DUCT INSULATION

COMMERCIAL

ALL SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHEN LOCATED IN UNCONDITIONED SPACES AND WITH A MINIMUM OF R-8 INSULATION WHEN LOCATED OUTSIDE THE BUILDING ENVELOPE. WHEN LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY, THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR OR UNCONDITIONED OR EXEMPT SPACES BY A MINIMUM OF R-8 INSULATION.

EXCEPTIONS:

1. WHEN LOCATED WITHIN EQUIPMENT.
2. WHEN THE DESIGN TEMPERATURE DIFFERENCE BETWEEN THE INTERIOR AND EXTERIOR OF THE DUCT OR PLENUM DOES NOT EXCEED 15°F (8°C).

ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK, SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS- EMBEDDED FABRIC SYSTEMS OR TAPES. TAPES AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. UNLISTED DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.

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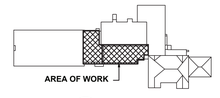

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⅛" ¼" ½" 0 1" 2"
REFERENCE SCALE

Drawing Title

HVAC: SCHEDULES

Drawing No.

H-801

HOOD INFORMATION – JOB#4027733

HOOD NO	TAG	MODEL	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	HOOD CONFIG ROW
1		5412 SND-2	9' 0"	450 DEG	I	MEDIUM	222	2000	10"	19"	4"		2000	1516	-0.665"	0	430 SS WHERE EXPOSED	ALONE	ALONE
2		286 MISC-PSP	9' 0"	300 DEG	I	N/A	0	0								1400	430 SS WHERE EXPOSED	ALONE	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1		CAPTRATE SOLO FILTER	6	20"	16"	85% SEE FILTER SPEC	4	RECESSED	NO	YES	470 LBS
2							0			NO	124 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 12.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 68.00" HIGH X 108.00" LONG 430 SS VERTICAL.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 68" HIGH INSULATED 430 SS.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 68" HIGH INSULATED 430 SS.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	PDS	LENGTH	WIDTH	HEIGHT	RISER(S) TYPE	WIDTH	LENG	DIA	CFM	SP
2		Front	108"	28"	6"	MUA	12"	28"		700	0.160"
						MUA	12"	28"		700	0.160"

FIRE SYSTEM INFORMATION – JOB#4027733

FIRE SYSTEM NO	TAG	TYPE	SIZE	FLOW POINTS	INSTALLATION SYSTEM	INSTALLATION LOCATION ON HOOD
1		ANSUL R102	3.0	3	WALL MOUNT LEFT	N/A

ELECTRICAL PACKAGE – JOB#4027733

NO	TAG	PACKAGE #	LOCATION	SWITCHES LOCATION	SWITCHES QUANTITY	OPTION	FANS CONTROLLED FAN TAG	TYPE	÷	HP	VOLT	FLA
1		DCV-1111	WALL MOUNT IN SS BOX	08 - SHIP LOOSE W/ PREWIRE	1 LIGHT 1 FAN	SMART CONTROLS DCV	KEF-1	EXHAUST	1	1.000	208	6.9
							MAU-1	SUPPLY	1	1.000	208	6.9

VERIFY CEILING HEIGHT

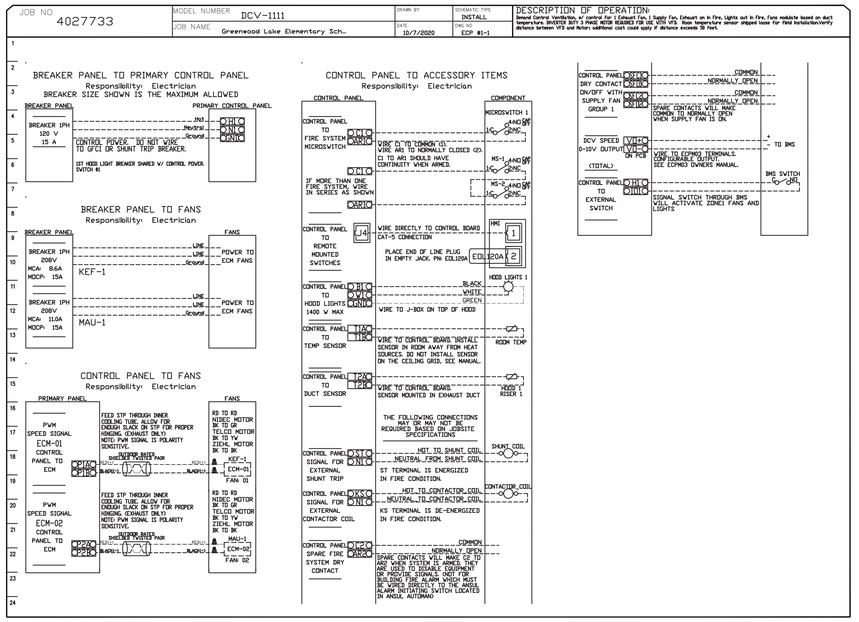
___' ___"

Height required to verify hood will fit and to size the enclosure panels (wrappers)

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH

NFPA #96
NSF
UL 710 & ULC710 STANDARDS
E.T.L. LISTED 3054804-001

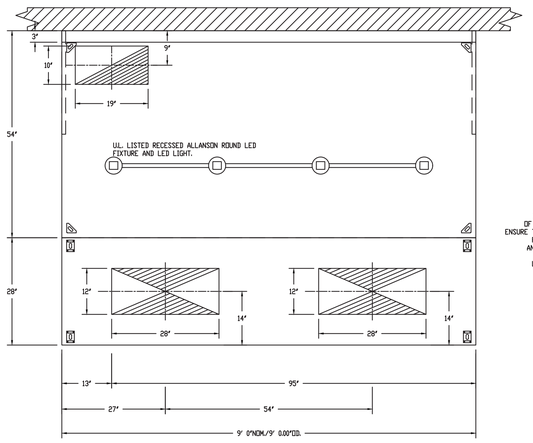
IMC 2015
SECTIONS 506, 507, & 508



SEQUENCE OF OPERATIONS:

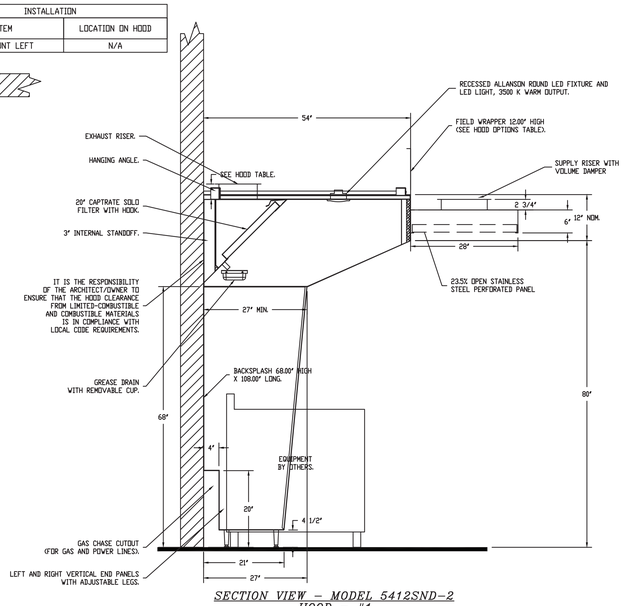
THE HOOD CONTROL PANEL IS CAPABLE OF OPERATING IN ONE OR MORE OF THE FOLLOWING STATES AT ANY GIVEN TIME:

- AUTOMATIC: THE SYSTEM OPERATES BASED ON THE DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE TEMPERATURE AT THE HOOD CAVITY OR EXHAUST DUCT COLLAR. FANS ACTIVATE AT A CONFIGURABLE TEMPERATURE DIFFERENTIAL THRESHOLD. DEPENDING ON THE JOB CONFIGURATION EACH FAN ZONE CAN BE CONFIGURED AS STATIC OR DYNAMIC. THESE TERMS REFER TO WHETHER A VARIABLE MOTOR (SUCH AS EC MOTORS OR VFD DRIVEN MOTORS) MODULATE WITH TEMPERATURE. IF THE PANEL IS EQUIPPED WITH VARIABLE SPEED FANS AND THE ZONE IS DEFINED AS "DYNAMIC", THESE WILL MODULATE WITHIN A USER-DEFINED RANGE BASED ON THE TEMPERATURE DIFFERENTIAL. PANELS EQUIPPED WITH VARIABLE SPEED FANS AND A FAN ZONE DEFINED AS "STATIC", FANS WILL RUN AT A SET SPEED CALCULATED FOR THE DRIVE. DEMAND CONTROL VENTILATION SYSTEMS ARE CAPABLE OF MODULATING EXHAUST AND MAKE UP AIR FAN SPEEDS PER THE REQUIREMENTS OUTLINED IN IECC 403.2.8.
- MANUAL: THE SYSTEM OPERATES BASED ON HUMAN INPUT FROM AN HMI.
- SCHEDULE: A WEEKLY SCHEDULE CAN BE SET TO RUN FANS FOR A SPECIFIED PERIOD THROUGHOUT THE DAY. THERE ARE THREE OCCUPIED TIMES PER DAY TO ALLOW FOR THE USER TO SET UP A TIME THAT IS SUITABLE TO THEIR NEEDS. ANY TIME THAT IS WITHIN THE DEFINED OCCUPIED TIME, THE SYSTEM WILL RUN AT MODULATION MODE AND FOLLOW THE FAN PROCEDURE ALGORITHM BASED ON TEMPERATURE DURING THIS TIME. DURING UNOCCUPIED TIME, THE SYSTEM WILL HAVE AN EXTRA OFFSET TO PREVENT UNINTENDED ACTIVATION OF THE SYSTEM DURING A TIME WHERE THE SYSTEM IS NOT BEING OCCUPIED.
- OTHER: THE SYSTEM OPERATES BASED ON THE INPUT FROM AN EXTERNAL SOURCE (DDC, BMS OR HARD-WIRED INTERLOCK).
- FIRE: UPON ACTIVATION OF THE HOOD FIRE SUPPRESSION SYSTEM, THE EXHAUST FAN WILL COME ON OR CONTINUE TO TO RUN, THE HOOD MAKEUP AIR WILL SHUTDOWN, AND A SIGNAL WILL BE SENT FOR ACTIVATING THE SHUNT TRIP BREAKER PROVIDED BY THE ELECTRICIAN. FUEL GAS WILL SHUT OFF VIA A MECHANICAL/ELECTRICAL GAS VALVE ACTUATED BY THE HOOD FIRE SUPPRESSION SYSTEM.

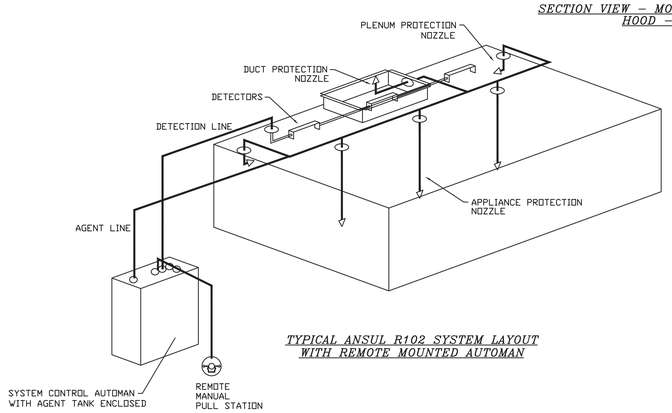


PLAN VIEW – HOOD #1
9' 0.00" LONG 5412SND-2

PLAN VIEW – HOOD #2
9' 0.00" LONG 286MISC-PSP



SECTION VIEW – MODEL 5412SND-2 HOOD – #1



TYPICAL ANSUL R102 SYSTEM LAYOUT WITH REMOTE MOUNTED AUTOMAN

SPECIFICATIONS

THE RESTAURANT FIRE SUPPRESSION SYSTEM SHALL BE THE PRE-ENGINEERED TYPE WITH A FIXED NOZZLE AGENT DISTRIBUTION NETWORK. IT SHALL BE LISTED WITH UNDERWRITERS LABORATORIES, INC. (UL)

THE SYSTEM SHALL BE CAPABLE OF AUTOMATIC DETECTION AND ACTUATION WITH LOCAL OR REMOTE MANUAL ACTUATION. ACCESSORIES SHALL BE AVAILABLE FOR MECHANICAL OR ELECTRICAL GAS LINE SHUT-OFF APPLICATIONS.

THE EXTINGUISHING AGENT SHALL BE A POTASSIUM CARBONATE, POTASSIUM ACETATE-BASED FORMULATION DESIGNED FOR FLAME KNOCKDOWN AND SECUREMENT OF GREASE RELATED FIRES. IT SHALL BE AVAILABLE IN PLASTIC CONTAINERS WITH INSTRUCTIONS FOR LIQUID AGENT HANDLING AND USAGE.

THE REGULATED RELEASE MECHANISM SHALL BE COMPATIBLE WITH A FUSIBLE LINK DETECTION SYSTEM. THE FUSIBLE LINK SHALL BE SELECTED AND INSTALLED ACCORDING TO THE OPERATING TEMPERATURE IN THE VENTILATING SYSTEM. THE FUSIBLE LINK SHALL BE SUPPORTED BY A DETECTOR BRACKET/ LINKAGE ASSEMBLY.

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLO FILTER

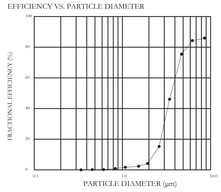
THE CAPTRATE GREASE-STOP SOLO FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

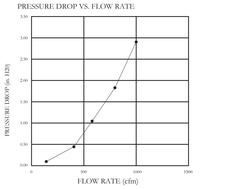
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

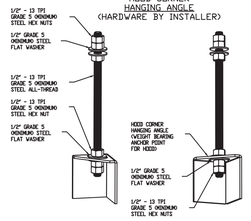
THE CAPTRATE GREASE-STOP SOLO WAS TESTED TO ASTM STANDARD ASTM F2519-05.





CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH.
NFPA #96
NSF STANDARD #2
UL STANDARD #1046
INT. MECH. CODE (IMC)
ULC-S649

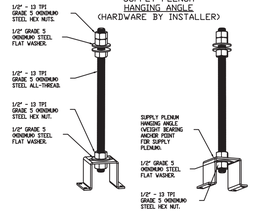
HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

SUPPLY PLENUM HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

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REVISIONS

	DESCRIPTION	DATE
1		
2		
3		
4		

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Greenwood Lake Elementary School R4
80 Waterstone Rd,,
GREENWOOD LAKE, NY, 10925

DATE: 3/23/21
DWG.#: 4027733
DRAWN BY: SWA
SCALE: 3/4" = 1'-0"
R4 DRAWING
SHEET NO. 1

GREENWOOD LAKE UNION FREE SCHOOL DISTRICT

SED PROJECT NUMBER
44-21-11-02-0-002-015

CAPITAL IMPROVEMENTS

LEGEND

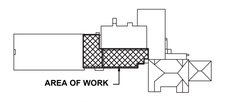
No.	Date	Revisions
	12/29/21	FOR BID

Drawn by	SBL
Checked by	EDF
Project No.	FE# 19-194
Scale	AS NOTED
Date	1-8-21

ERIC D. FELLENZER, P.E.
STATE OF NEW YORK
NY PROFESSIONAL ENGINEER
NO. 073084-1

GREENWOOD LAKE UNION FREE SCHOOL DISTRICT

GREENWOOD LAKE ELEMENTARY SCHOOL



FELLENZER ENGINEERING LLP
FE #: 19-194
www.fellp.com
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181 Church St., Suite 100, Poughkeepsie, NY 12601 t 845-454-9704 fx 855-320-8735

⅛" ¼" ½" 0 1" 2"
REFERENCE SCALE

Drawing Title
HVAC: CAPTIVE AIRE DRAWINGS

Drawing No.
H-802

EXHAUST FAN INFORMATION – Job#4027733

FAN UNIT NO.	TAG	FAN UNIT MODEL #	CFM	ESP.	RPM	H.P.	B.H.P.	ø	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS.)	SONES
1	KEF-1	DUBSHFA	2000	0.850	1383	1.000	0.4690	1	208	6.9	633 FPM	92	16.2

MUA FAN INFORMATION – Job#4027733

FAN UNIT NO.	TAG	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP.	RPM	H.P.	B.H.P.	ø	VOLT	FLA	WEIGHT (LBS.)	SONES	BURNER EFFICIENCY(%)
2	MAU-1	A1-IBT-150-15D	15MF-1-MOD	A1-IBT-150	800	1400	0.375	1455	1.000	0.5530	1	208	6.9	830	12	80

GAS FIRED MAKE-UP AIR UNIT(S)

FAN UNIT NO.	TAG	INPUT BTUs	OUTPUT BTUs	TEMP. RISE	REQUIRED INPUT GAS PRESSURE	GAS TYPE
2	MAU-1	137595	110076	66 deg F	7 in. w.c. - 14 in. w.c.	Natural

FAN OPTIONS

FAN UNIT NO.	TAG	OPTION (Qty. - Descr)
1	KEF-1	1 - Grease Box
		1 - ECM Wiring Package - PWM Signal from ECPM03 Prewire (TELCO Motor), CCW Rotation
2	MAU-1	1 - Motorized Backdraft Damper for A1-I Housing
		1 - Inlet Pressure Gauge, 0-35"
		1 - Manifold Pressure Gauge, 0 to 10" wc, 1 Furnace
		1 - Single Point Electrical Connection Single Module. If a Non-DCV Prewire is used on the IBT Heater, the #28, #47, "NS", "MA", or "E2" Option Prewire must be selected. Do not provide supply starter in prewire.
		1 - Freezestat
		1 - ECM Wiring Package - DD Supply - PWM Signal from ECPM03 Prewire (TELCO Motor)

CURB ASSEMBLIES

NO.	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	36 LBS	Curb	23.000"W x 23.000"L x 20.000"H Vented Hinged
2	# 2	MAU-1	85 LBS	Curb	21.000"W x 71.000"L x 20.000"H Insulated
	# 2			Rail	6.000"W x 21.000"L x 20.000"H

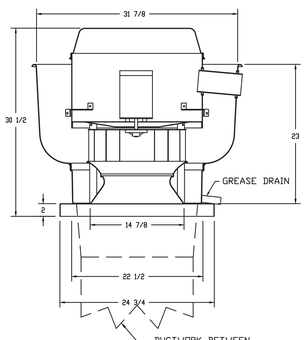
FAN #2 A1-IBT-150-15D - HEATER (MAU-1)
1. INDIRECT BENT TUBE GAS FIRED HEATER WITH 15" DIRECT DRIVE FAN, 1 FURNACE, ELECTRONIC FULL MODULATION, CONSTANT 80% EFFICIENCY, AND 6:1 MAX TURNDOWN FOR NG, (5:1 MAX TURNDOWN FOR LP). STAINLESS STEEL BURNER AND HEAT EXCHANGER.
2. INTAKE HOOD WITH EZ FILTERS.
3. SIDE DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. MOTORIZED BACK DRAFT DAMPER 16" X 18" FOR SIZE 1 STANDARD & MODULAR HEATER UNITS W/EXTENDED SHAFT, STANDARD GALVANIZED CONSTRUCTION, 3/4" REAR FLANGE, LOW LEAKAGE, TF1820S ACTUATOR INCLUDED.
5. GAS PRESSURE GAUGE, 0-25", 2.5" DIAMETER, 1/4" THREAD SIZE.
6. GAS PRESSURE GAUGE, 0 TO +10 INCHES WC., 2.5" DIAMETER, 1/8" THREAD SIZE, REAR THREAD.
7. SINGLE POINT ELECTRICAL CONNECTION FOR ALL IBT HEATERS WITH 1 MODULE. QNTY 1 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE IS USED ON THE IBT HEATER, THE #28, #47, "MA", OR "E2" OPTION PREWIRE MUST BE SELECTED. DO NOT PROVIDE SUPPLY STARTER IN PREWIRE.
8. FREEZESTAT FACTORY SET AT 25°F AND 10 MINUTES.
9. USED WITH SIZE 1 AND SIZE 2 SIDE DISCHARGE IBT MODULES.
10. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
IBT - US PATENT 877119 B2.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 20" x 20".

SUPPLY SIDE HEATER INFORMATION

WINTER TEMPERATURE = 9°F. TEMP. RISE = 66°F.
BTUs CALCULATED OFF ACTUAL AIR DENSITY
OUTPUT BTUs AT ALTITUDE OF 0.0 FT. = 112616.
INPUT BTUs AT ALTITUDE OF 0.0 FT. = 140770.
OUTPUT BTUs AT ALTITUDE OF 630 FT. = 110076.
INPUT BTUs AT ALTITUDE OF 630 FT. = 137595.

FAN #1 DUBSHFA - EXHAUST FAN (KEF-1)



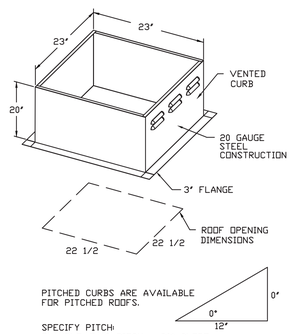
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
- ROOF MOUNTED FANS
- RESTAURANT MODEL
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL
- INTERNAL WIRING
- WEATHERPROOF DISCONNECT
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
- HIGH HEAT OPERATION 300°F (149°C)
- GREASE CLASSIFICATION TESTING

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

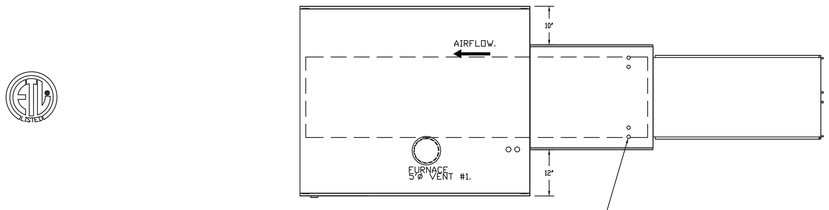
ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

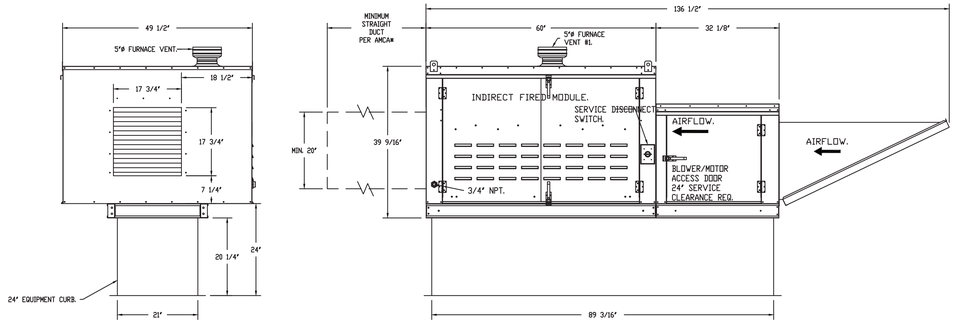
OPTIONS
GREASE BOX.
ECM WIRING PACKAGE - PWM SIGNAL FROM ECPM03 PREWIRE (TELCO MOTOR), CCW ROTATION.

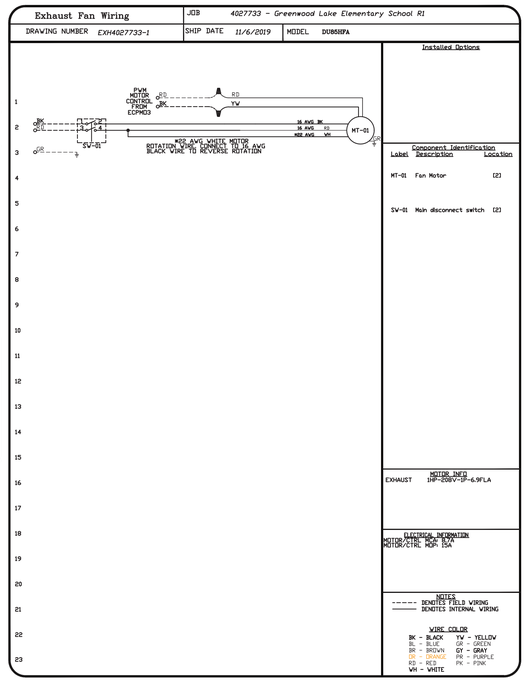


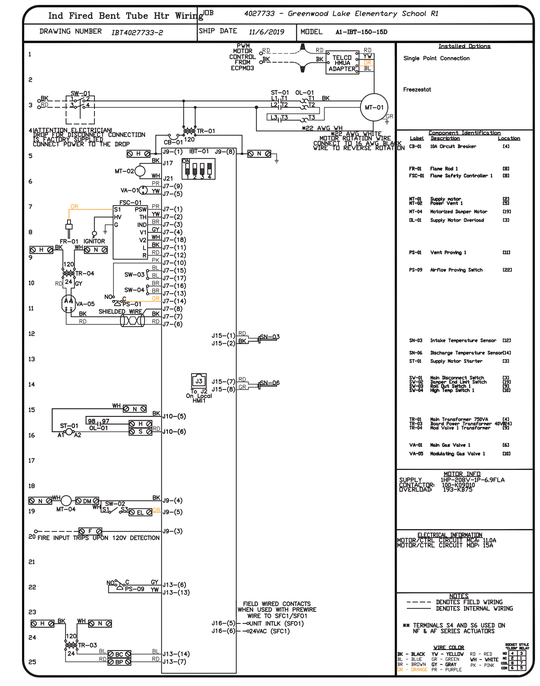
PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE









REVISIONS

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1		
2		
3		
4		

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SED PROJECT NUMBER
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CAPITAL IMPROVEMENTS

LEGEND

No.	Date	Revisions