MECHANICAL SYMBOL LIST

NOTE: This is a standard symbol list and not all items listed may be used.

ABBREVIATIONS

CD	CEILING DIFFUSER
CONT.	CONTINUATION
CFM	CUBIC FEET PER MINUTE
DB	DECIBEL
DIA	DIAMETER
DB	DRY BULB
EFF	EFFICIENT
ELECT	ELECTRICAL
EAT	ENTERING AIR TEMPERATURE
EXH	EXHAUST
EF	EXHAUST FAN
F	FAHRENHEIT
FT	FEET
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
HTR	HEATER
HTG	HEATING
HP	HORSEPOWER
IN	INCHES
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MIN	MINIMUM
MA	MIXED AIR
MD	MOTORIZED DAMPER
NC	NOISE CRITERIA
N/A	NOT APPLICABLE
NTS	NOT TO SCALE
NO.	NUMBER
OC	ON CENTER
OBD	OPPOSED BLADE DAMPER
OA	OUTSIDE AIR
OSA	OUTSIDE AIR
PH	PHASE
LBS.	POUNDS
PD	PRESSURE DROP
QTY	QUANTITY
RET	RETURN
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
R	RISE
SF	SQUARE FEET
SP	STATIC PRESSURE
SA	SUPPLY AIR
T, TEMP	TEMPERATURE
TD	TEMPERATURE DIFFERENCE
MBH	THOUSAND BTU'S PER HOUR
UH	UNIT HEATER
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VEL	VELOCITY
V	VOLT
VD	VOLUME DAMPER (HAND OPERATOR)
WC	WATER COLUMN
W	WATT
W/	WITH

CONTROL SYMBOLS

CO — CARBON MONOXIDE SENSOR

T SPACE — SPACE AIR TEMPERATURE SENSOR

DAMPERS

OBD / CRD — MOTORIZED DAMPER

VOLUME DAMPER

DIFFUSERS AND GRILLES

12x12 / 100 CD-1 — DIFFUSER OR GRILLE IDENTIFICATION

EXHAUST AIR

RETURN AIR

RETURN/EXHAUST AIR FLOW

SUPPLY AIR

SUPPLY AIR FLOW

DUCTWORK FITTINGS

ACOUSTICALLY LINED DUCT (SIZES SHOWN ARE NET INSIDE)

BELLMOUTH

CONCENTRIC SQUARE TO ROUND

CONCENTRIC TRANSITION, RECTANGULAR OR ROUND

ECCENTRIC TRANSITION, RECTANGULAR OR ROUND

FLEXIBLE CONNECTION

MITERED ELBOW WITH TURNING VANES

NON-SYMMETRICAL WYE

RADIUSED ELBOW

RECTANGULAR DUCT DROP

RECTANGULAR DUCT RISER

RECTANGULAR MAIN WITH RECTANGULAR BRANCH

RECTANGULAR MAIN WITH ROUND BRANCH

RECTANGULAR OFFSET LESS THAN 15%%d

RECTANGULAR OFFSET MORE THAN 15%%d

ROUND DUCT DROP

ROUND DUCT RISER

ROUND DUCT WITH ROUND BRANCH

ROUND WYE

SYMMETRICAL WYE

GENERAL

CONTINUATION

X / X — DETAIL NUMBER AND SHEET LOCATION

XX-X / LOCATION — EQUIPMENT IDENTIFICATION

X — KEYED NOTE

X / XXX — SECTION NUMBER AND SHEET LOCATION

SHEET INDEX

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EXPIRES: 12/31/19

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COVER SHEET - MECHANICAL
Urban Forestry Maintenance Facility

PROJECT MANAGER: Robin Laughlin
DRAWN BY: JS
SCALE: REFERENCE DETAILS
DATE: 10.04.2019
SECTION:

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FAN SCHEDULE

SYMBOL	AREA SERVED	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL	TYPE	DRIVE	AIR FLOW (CFM)	ESP (IN H2O)	MAX RPM	SOUND (SONES)	ELECTRICAL VOLTS	PH	FLA	HP/(WATTS)	MAX WT (LBS)	NOTES
EF-1	LARGE VEHICLE BAY 112	GREENHECK	SP-A1050	CEILING CABINET	DIRECT	1015	0.25	1140	6	115	1	-	(786)	60	1
EF-2	DRYING ROOM 115	GREENHECK	SP-A510	CEILING CABINET	DIRECT	400	0.25	1010	3.5	115	1	-	(224)	40	1
EF-3	SMALL ENGINE PARTS 106	GREENHECK	SP-A1410	CEILING CABINET	DIRECT	1200	0.25	1310	8	115	1	-	(786)	60	1
HVLV-1	EQUIPMENT STORAGE 115	B. A. FANS	ESSENCE	HIGH VOLUME LOW VELOCITY	DIRECT	-	-	107	-	115	1	10	-	81	2,3
HVLV-2	EQUIPMENT STORAGE 115	B. A. FANS	ESSENCE	HIGH VOLUME LOW VELOCITY	DIRECT	-	-	107	-	115	1	10	-	81	2,3
HVLV-3	EQUIPMENT STORAGE 115	B. A. FANS	ESSENCE	HIGH VOLUME LOW VELOCITY	DIRECT	-	-	107	-	115	1	10	-	81	2,3

NOTES:
1 INLET SCREEN.
2 10 FT. PROPELLER BLADE DIAMETER, EXTENSION TUBE FOR MOUNTING HEIGHT BY ARCHITECT, COLOR BY ARCHITECT, WIRED WALL CONTROLLER CONTROLS ALL (3) FANS.
3 DEDUCT ALTERNATE.

FURNACE SCHEDULE

SYMBOL	AREA SERVED	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL	SUPPLY FAN TOTAL CFM	SUPPLY FAN MIN OSA CFM	SUPPLY FAN ESP (IN H2O)	GAS FURNACE INPUT (MBH)	GAS FURNACE OUTPUT (MBH)	GAS FURNACE MIN. EFF. (%)	ELECTRICAL VOLTS	PH	MCA	MOCP	MAX WT (LBS)	NOTES
F-1	TOOLS/PARTS	TRANE	TUX080C942D	1250	300	0.7	80	74	92.5	115	1	9.5	15	160	
F-2	TOOL ROOM/LOCKERS	TRANE	TUX100C960D	1750	300	0.7	100	92	92	115	1	12.9	15	200	

NOTES:

GAS UNIT HEATER SCHEDULE

SYMBOL	AREA SERVED	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL	SUPPLY FAN TOTAL CFM	SUPPLY FAN TYPE	SUPPLY FAN MHP	GAS FURNACE INPUT (MBH)	GAS FURNACE OUTPUT (MBH)	GAS FURNACE MIN. EFF. (%)	ELECTRICAL VOLTS	PH	FLA	MOCP	MAX WT (LBS)	NOTES
UH-1	DRYING ROOM 115	REZNOR	UDAS	450	PROP.	0.02	30	24.6	82	115	1	1.9	15	60	1

NOTES:
1 PROVIDE CEILING HANGING BRACKET, CONCENTRIC FLUE AND COMBUSTION AIR INTAKE ACCESSORY AND REMOTE THERMOSTAT.

ENERGY RECOVERY VENTILATOR SCHEDULE

SYMBOL	AREA SERVED	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL	SUPPLY FAN TOTAL CFM	SUPPLY FAN MIN OSA CFM	SUPPLY FAN ESP (IN H2O)	EXHAUST FAN TOTAL CFM	EXHAUST FAN ESP (IN H2O)	WINTER SA EAT (°F)	WINTER SA LAT (°F)	WINTER EA EAT (°F)	WINTER EA LAT (°F)	SUMMER SA EAT (°F)	SUMMER SA LAT (°F)	SUMMER EA EAT (°F)	SUMMER EA LAT (°F)	FILTER EFF MERV	ELECTRICAL VOLTS	PH	MCA	MOCP	MAX WT (LBS)	NOTES
ERV-1	BUILDING	MITSUBISHI	LGH-F600RX5-E	600	600	0.5	600	0.5	---	---	---	---	---	---	---	---	8	208	1	3.6	15	140	1

NOTES:
1 TEMPERATURE RECOVERY EFFICIENCY: 67 PCT, ENTHALPY RECOVERY EFFICIENCY: 64 PCT IN HEAITNG AND 50 PCT IN COOLING

DIFFUSER, REGISTER AND GRILLE SCHEDULE

SYMBOL	TYPE	FACE	FRAME	DAMPER	FINISH	BASIS OF DESIGN	NOTES
CD-1	CEILING DIFFUSER	PERFORATED	SURFACE	NONE	WHITE	TITUS PCS	
CEG-1	CEILING EXHAUST GRILLE	PERFORATED	SURFACE	NONE	WHITE	TITUS PAR	
CRG-1	CEILING RETURN GRILLE	PERFORATED	SURFACE	NONE	WHITE	TITUS PAR	

NOTES:

GAS-FIRED INFRARED HEATER SCHEDULE

SYMBOL	LOCATION	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL	RADIANT TUBE LENGTH (FT)	GAS FURNACE INPUT (MBH)	ELECTRICAL VOLTS	PH	MCA	MAX WT (LBS)	NOTES
IH-1 THRU IH-19	SECTORS A AND B	ROBERTS-GORDON	BH-40	10	40	120	1	1	30	1,2,3,4,5,6
IH-20 THRU IH-25	GREENHOUSE	ROBERTS-GORDON	BH-60	20	60	120	1	1	30	1,2,3,4,5,6,7

NOTES:
1 RADIANT TUBING TO BE 4" DIA. HOT ROLLED STEEL, TAILPIPE TO BE 4" DIA. PORCELAINIZED HOT ROLLED STEEL
2 ALL BURNER POWER COMES FROM BURNER ZONE RELAYS ON MAIN CONTROLLERS
3 PROVIDE WITH REGULATOR, FLEXIBLE GAS CONNECTOR AND SHUT OFF VALVE
4 PROVIDE WITH TUBING AND REFLECTOR
5 PROVIDE SIDE REFLECTOR ALONG WALLS WHERE SHOWN.
6 WEIGHT SHOWN FOR BURNER ONLY. AVERAGE SYSTEM WEIGHT IS 32 LBS PER LINEAL FOOT.
7 MINIMUM MOUNTING HEIGHT: 10 FT. AFF

OUTSIDE AIR VENTILATION SCHEDULE - SINGLE ZONE OR 100% OSA SYSTEMS

HVAC UNIT	ROOM	Az NET OCCUPIABLE FLOOR AREA (SF)	Rp PEOPLE OUTDOOR AIR RATE (CFM / PERSON)	Ra AREA OUTDOOR AIR FLOW RATE (CFM/SQ FT)	DEFAULT OCCUPANT DENSITY (#/1000SF)	DEFAULT ZONE POPULATION	Pz ACTUAL ZONE POPULATION	Vbz BREATHING ZONE OUTDOOR AIRFLOW (CFM)	EZ ZONE AIR DISTRIBUTION EFFECTIVENESS	Voz ZONE OUTDOOR AIRFLOW (CFM)	OSA PROVIDED (CFM)
F-2	100 - EDUCATION MATERIAL	500	8	0.06		0	0	30	0.8	38	40
F-1	102 - PESTICIDES	213	10	0.06		0	0	13	0.8	16	20
F-2	104, 104A - TOOL ROOM	845	10	0.06		0	0	51	0.8	63	70
F-1	105 - HANGING TOOLS	273	10	0.06		0	0	16	0.8	20	30
F-1	107 - SMALL ENGINE PARTS	353	10	0.06		0	4	61	0.8	76	80
F-2	109 - LOBBY	220	5	0.06	10	3	5	38	0.8	48	50
F-2	110 - LOCKERS	120	5	0.06		0	3	22	0.8	28	30
F-1	110 - CORRIDOR	562	0	0.06	0	0	0	34	0.8	42	50
EF-1	LARGE VEHICLE BAY 112	1,015	0	0.75	0	0	0	761	1.0	761	1,015
	EQUIPMENT STORAGE 115, 116, 117	4227	0	0.06	0	0	0	254	1.0	254	

NOTES:

ELECTRIC WALL HEATER SCHEDULE

SYMBOL	AREA SERVED	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL	TYPE	ELECTRICAL VOLTS	PH	HEAT KW	STAGES	MAX WT (LBS)	NOTES
EWH-1	ELECT 101	QMARK	CWH1000	RECESSED	120	1	1	2	15	1
EWH-2	FIRE RISER 101A	QMARK	CWH1000	RECESSED	120	1	1	2	15	1

NOTES:
1 INTEGRAL THERMOSTAT.

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JULY 21, 1998
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EXPIRES: 12/31/19

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SCHEDULES - MECHANICAL
Urban Forestry Maintenance Facility
PROJECT MANAGER: Robin Laughlin

DATE: 10.04.2019
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M0.02

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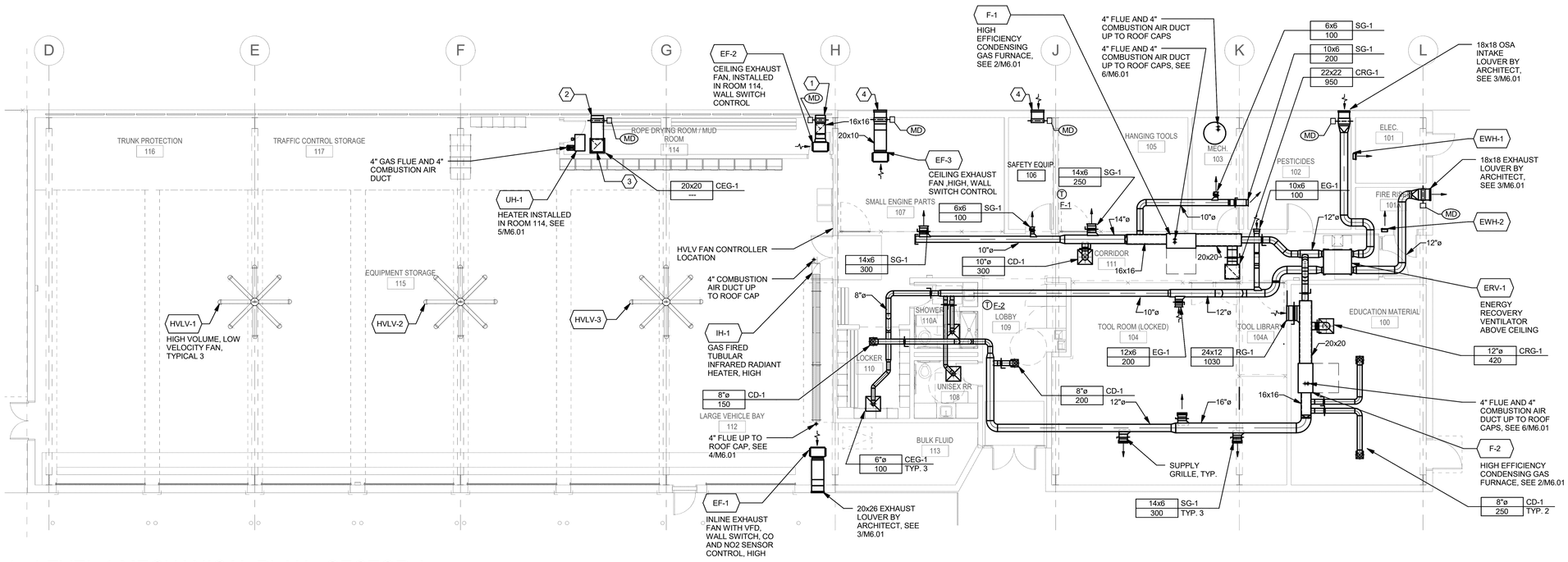
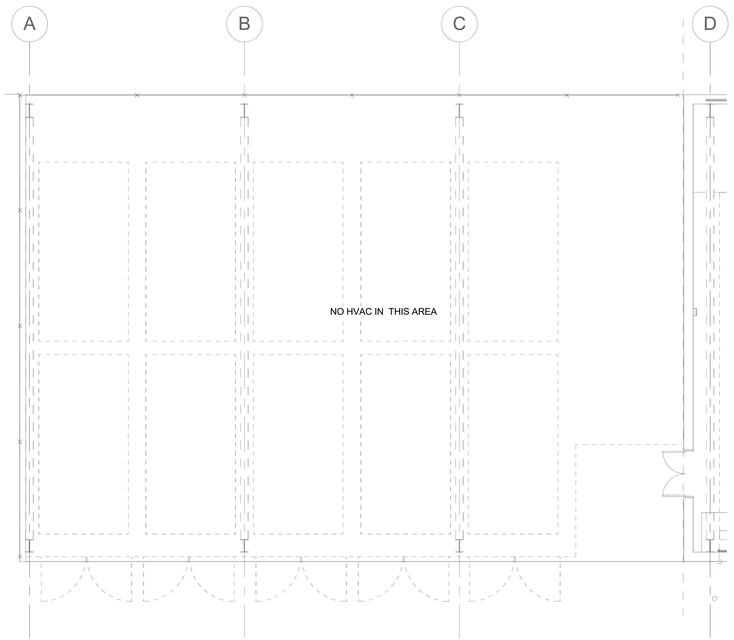


1 LEVEL 1 MECHANICAL PLAN - SECTOR A

0' 4' 8' 16'

1/8" = 1'-0"



2 LEVEL 1 MECHANICAL PLAN - SECTOR B

0' 4' 8' 16'

1/8" = 1'-0"

SHEET KEYNOTES

1 16x16 DUCT CONNECTION TO EXTERIOR LOUVER BY ARCHITECT. SEAL AIRTIGHT TO INTERIOR LOUVER FACE.

2 20x20 DUCT CONNECTION TO EXTERIOR LOUVER BY ARCHITECT. SEAL AIRTIGHT TO INTERIOR LOUVER FACE.

3 20x20 DUCT DOWN THROUGH CEILING OF ROOM 114. TERMINATE WITH 1/2"x1/2" BIRDSCREEN AND PROVIDE SEALED FLANGE IN CEILING WHERE PENETRATION OCCURS.

4 20x26 DUCT CONNECTION TO EXTERIOR LOUVER BY ARCHITECT. SEAL AIRTIGHT TO INTERIOR LOUVER FACE.

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LEVEL 01 FLOOR PLAN SECTORS - HVAC
Urban Forestry Maintenance Facility

PROJECT MANAGER: Robin Laughlin
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M1.10A

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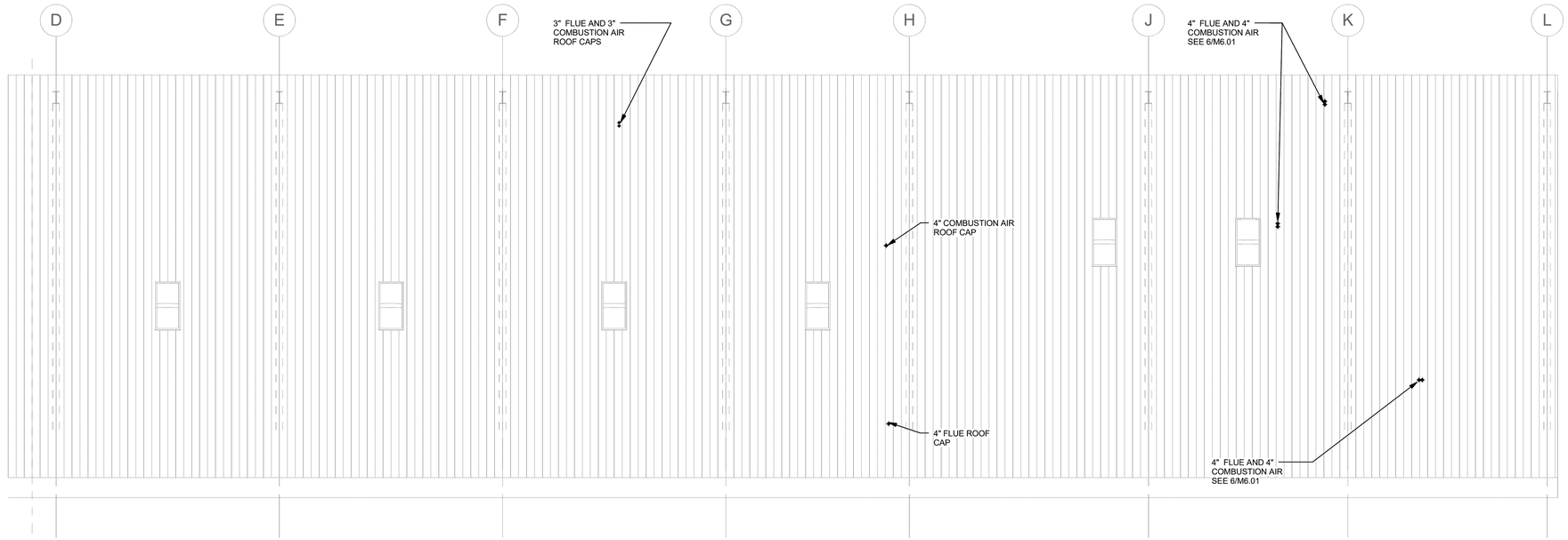
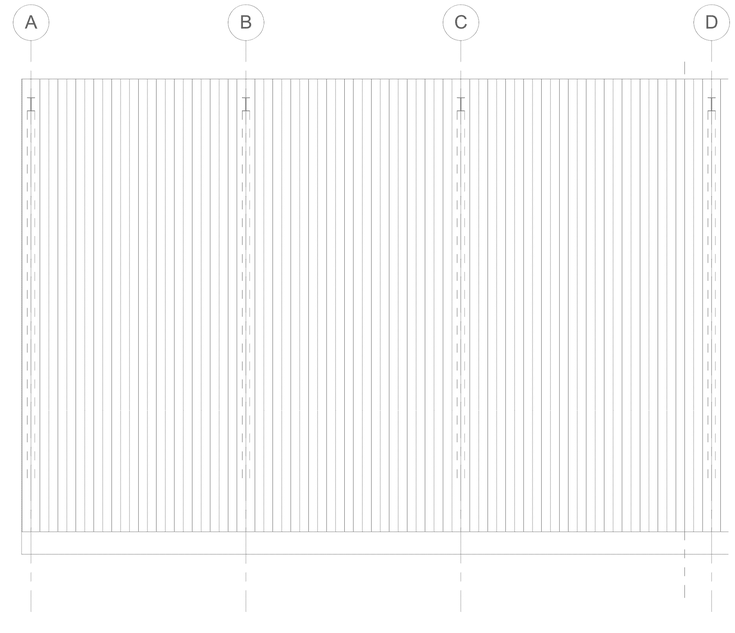


1 ROOF MECHANICAL PLAN - SECTOR A

0' 4' 8' 16'

1/8" = 1'-0"



2 ROOF MECHANICAL PLAN - SECTOR B

0' 4' 8' 16'

1/8" = 1'-0"

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ROOF PLAN SECTORS - HVAC
Urban Forestry Maintenance Facility

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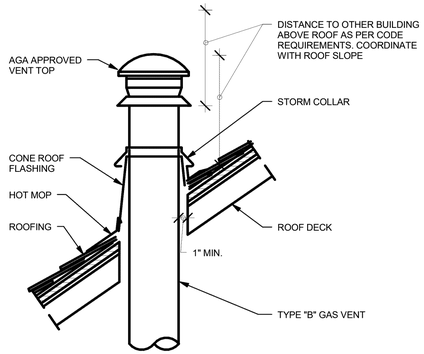
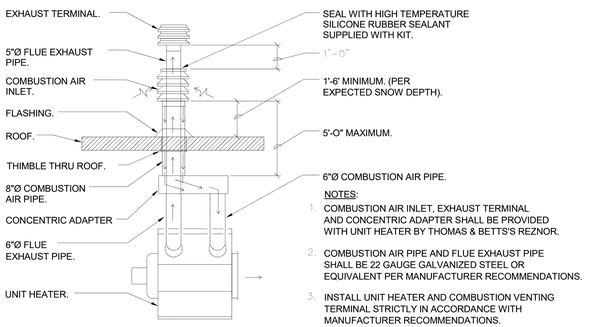


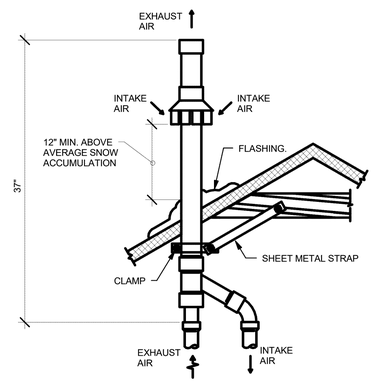
4 TYPE 'B' FLUE THRU SLOPED ROOF

NO SCALE



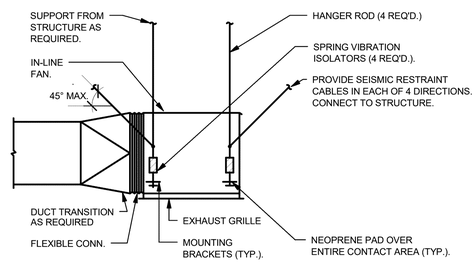
5 GAS UNIT HEATER VENTING

NO SCALE



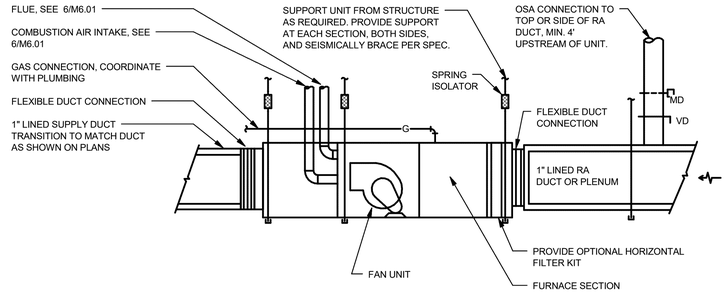
6 FURNACE CONCENTRIC ROOF TERMINATION

NO SCALE



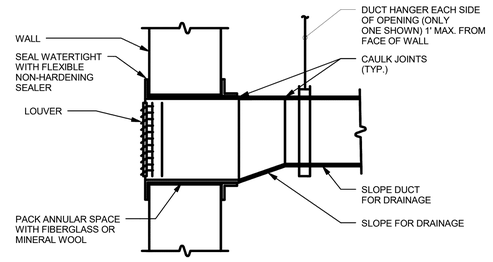
1 CEILING EXHAUST FAN

NO SCALE



2 CONDENSING FURNACE

NO SCALE



3 LOUVERED WALL PENETRATION

NO SCALE

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