MECHANICAL SYSTEMS GENERAL NOTES

A. ALL PIPING IS TO BE RUN CONCEALED IN FINISHED AREAS. COORDINATE PIPING INSTALLATION WITH WORK OF OTHER TRADES TO ENSURE CONCEALMENT.

B. COORDINATE ALL EQUIPMENT LOCATIONS AND INSTALLATION WITH THE WORK OF OTHER TRADES. COORDINATE EQUIPMENT WITH WALL, CEILING AND FLOOR FINISHES.

C. COORDINATE DIFFUSER LOCATIONS WITH LIGHTING, FIRE DETECTION, AND CEILING. COORDINATE DUCTWORK WITH LIGHTING AND PIPING INSTALLERS TO ALLOW CLEARANCE FOR LIGHT FIXTURES, PIPING AND WORK OF OTHER TRADES.

D. COORDINATE LOUVER, DIFFUSER AND GRILLE FRAME TYPES TO MATE AND MATCH ADJACENT WALL AND CEILING CONSTRUCTION.

E. COORDINATE DUCTWORK WITH WORK OF OTHER TRADES TO ENSURE ALL DUCTWORK IS CONCEALED. COORDINATE EXACT DIFFUSER AND GRILLE LOCATIONS TO MATCH ARCHITECTURAL REQUIREMENTS FOR SPACING AND CENTERING.

F. PROVIDE MANUAL BALANCING DAMPERS FOR ALL DUCT BRANCHES SERVING SUPPLY DIFFUSERS, RETURN AIR GRILLES, LINEAR SLOTS AND EXHAUST AIR GRILLES.

G. UNLESS OTHERWISE NOTED PROVIDE DRAINS AT LOW POINTS. DRAINS SHALL BE CONSTRUCTED WITH 3/4" BALL VALVE WITH HOSE CONNECTION AND END CAP.

H. VERIFY THAT EQUIPMENT MATCHES FIELD VOLTAGE. COORDINATE WITH ELECTRICAL CONTRACTOR FOR REQUIREMENTS PRIOR TO ORDER.

I. INSTALLATION SHALL PROVIDE FOR SERVICE ACCESS AREAS AND COIL PULLS. CONFIRM LOCATIONS AND SERVICEABILITY PRIOR TO ORDER.

J. COORDINATE ANY INTERRUPTION OF UTILITY SERVICES WITH OWNER.

K. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL WORK. REFER TO STRUCTURAL DRAWINGS FOR EXACT LOCATIONS OF BUILDING STRUCTURAL ELEMENTS. COORDINATE ALL EQUIPMENT LOCATIONS, CONCEALMENT AND SURFACE FINISH TREATMENTS WITH WORK OF ALL TRADES. IN ANY CASE OF DISCREPANCY BETWEEN THE PLANS OR IN ANY CASE WHERE SUCH ISSUES REQUIRE CLARIFICATION, NOTIFY ENGINEER IN WRITING.

L. ALL PIPING AND DUCTWORK SIZES INDICATED ARE MINIMUM SIZES. LARGER SIZES MAY BE INSTALLED BY THE CONTRACTOR IN ALL CASES. EXISTING SURFACES, SUBSTRATES, OR STRUCTURE WHICH ARE PENETRATED, ALTERED OR DAMAGED IN ANY WAY BY THE WORK ASSOCIATED WITH THIS CONTRACT SHALL BE REPAIRED SO AS TO MATCH ORIGINAL SURFACE, SUBSTRATE, OR STRUCTURE.

M. ALL SURFACE MOUNTED EQUIPMENT SHALL BE FASTENED WITH ANCHORS OR FASTENERS AS SPECIFIED FOR THE SUBSTRATE. PLASTIC OR FIBER SHIELDS ARE NOT ACCEPTABLE.

N. DRAWINGS ARE DIAGRAMATIC, AND DO NOT SHOW ALL RISES, DROPS, OFFSETS, AND ROUTING TO AVOID OBSTRUCTIONS. CONTRACTOR SHALL BE RESPONSIBILE FOR FIELD CONDITIONS REQUIRING ADDITIONAL MATERIAL QUANTITIES.

O. WHEN REMOVING ANY EXISTING PNEUMATIC CONTROLS NOT TO BE REUSED CAP PNEUMATIC PIPING AIR TIGHT TO MAINTAIN SYSTEM ITEGRITY AND PROVIDE FOR PROPER SYSTEM OPERATION OF COMPRESSED AIR SYSTEM TO WORK.

P. PITCH CONDENSATE PIPING AT 1" PER 10'-0 TOWARDS FLOOR DRAIN, SLOP SINK OR HUB DRAIN

CONTROLS SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
DI	DIGITAL INPUT (GENERAL)	DSD	DUCT SMOKE DETECTOR
DO	DIGITAL OUTPUT (GENERAL)	CT	CURRENT TRANSDUCER
AI	ANALOG INPUT (GENERAL)	I/P	ELECTRIC/PNEUMATIC TRANSDUCER
AO	ANALOG OUTPUT (GENERAL)	I/E	ELECTRONIC/ELECTRIC TRANSDUCER
	THERMOWELL		ELECTRICAL INTERFACE
A	ALARM	S	START/STOP
E	ELECTRIC ACTUATOR	O/C	OPEN/CLOSE
FZ	FREEZE-STAT	E/D	ENABLE/DISABLE
H	HUMIDIFIER		HARD WIRE INTERFACE
R	RELAY	I	ELECTRONIC INTERFACE
S	STATUS		PNEUMATIC CONTROL VALVE (3-WAY)
M	FLOW METER		PNEUMATIC CONTROL VALVE (2-WAY)
BTU	BTU ENERGY METER	E	ELECTRIC/ELECTRONIC CONTROL VALVE (3-WAY)
	AIR FLOW MEASURING STATION	E	ELECTRIC/ELECTRONIC CONTROL VALVE (2-WAY)
	AVERAGING SENSOR	S	SOLENOID VALVE
H	HUMIDITY SENSOR (DUCT MOUNTED)		THERMOSTATIC EXPANSION VALVE
T	TEMPERATURE SENSOR (DUCT OR PIPE MOUNTED)		AUTOMATIC AIR DAMPER (PARALLEL BLADE)
CO2	CARBON DIOXIDE SENSOR (DUCT MOUNTED)		AUTOMATIC AIR DAMPER (OPPOSED BLADE)
S	SPACE TEMPERATURE SENSOR (WALL MOUNTED)		PNEUMATIC ACTUATOR
H	SPACE HUMIDITY SENSOR (WALL MOUNTED)	M	MAIN TEMPERATURE CONTROL AIR SOURCE
C	CARBON DIOXIDE ROOM SENSOR (WALL MOUNTED)	EA	EXHAUST AIR
CO	CARBON MONOXIDE ROOM SENSOR (WALL MOUNTED)	OA	OUTSIDE AIR
N	NITROGEN DIOXIDE ROOM SENSOR (WALL MOUNTED)	RA	RETURN AIR
T	PNEUMATIC THERMOSTAT	SA	SUPPLY AIR
T E	LINE VOLTAGE THERMOSTAT	SF	SUPPLY FAN
OS	OCCUPANCY SENSOR	SC	SMOKE CONTROL FAN
M	MOISTURE SENSOR	RF	RETURN AIR FAN
	PROBE SENSOR	EF	EXHAUST AIR FAN
FS	FLOW SENSOR/SWITCH		FILTER
ES	END SWITCH		BASE MOUNTED PUMP
S M	MANUAL SWITCH		IN LINE PUMP
ΔP	DIFFERENTIAL STATIC PRESSURE SWITCH	ASD	ADJUSTABLE SPEED DRIVE
P	DIFFERENTIAL STATIC PRESSURE SENSOR	C C	COOLING COIL
E P	ELECTRIC/PNEUMATIC SWITCH OR RELAY	H C	HEATING COIL
P E	PNEUMATIC/ELECTRIC SWITCH OR RELAY	HR C	HEAT RECOVERY COIL
F	FLOW TRANSMITTER TRANSDUCER	R134a	REFRIGERANT R134a SENSOR (WALL MOUNTED)
P	PRESSURE SENSOR		

HVAC SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EXISTING WORK TO BE REMOVED	A	COMPRESSED AIR
	POINT OF CONNECTION	V	VENT
		BBD	BOILER BLOW DOWN
	POINT OF DISCONNECTION	CS	CONDENSER WATER SUPPLY
		CR	CONDENSER WATER RETURN
X	DRAWING KEYNOTE	CWS	CHILLED WATER SUPPLY
X	DEMOLITION KEYNOTE	CWR	CHILLED WATER RETURN
MBH	THOUSAND BTU/HOUR	D	DRAIN
NTS	NOT TO SCALE	FOF	FUEL OIL FILL
(E)	EXISTING	FOG	FUEL OIL GAUGE
(L)	ACOUSTIC THERMAL LINING - 1-1/2" THICK	FOS	FUEL OIL SUPPLY
(2L)	ACOUSTIC THERMAL LINING - 2" THICK	FOR	FUEL OIL RETURN
(DBL)	DOUBLE WALL LINED DUCT	FOV	FUEL OIL TANK VENT
FPM	FEET PER MINUTE	G	GAS
CFM	CUBIC FEET PER MINUTE	GS	GLYCOL SUPPLY
AFF	ABOVE FINISHED FLOOR	GR	GLYCOL RETURN
AD	ACCESS DOOR	HPWS	HEAT PUMP WATER SUPPLY
W/W	WALL TO WALL	HPWR	HEAT PUMP WATER RETURN
G.C.	GENERAL CONTRACTOR	HWS	HOT WATER SUPPLY
M.C.	MECHANICAL CONTRACTOR	HWR	HOT WATER RETURN
P.C.	PLUMBING CONTRACTOR	LPS	LOW PRESSURE STEAM
E.C.	ELECTRICAL CONTRACTOR	LPC	LOW PRESSURE CONDENSATE
N.O.	NORMALLY OPEN	MPS	MEDIUM PRESSURE STEAM
N.C.	NORMALLY CLOSED	MPC	MEDIUM PRESSURE CONDENSATE
	FLEXIBLE DUCTWORK	HPS	HIGH PRESSURE STEAM
AxB FO	DUCT SECTION - FLAT OVAL (FO)	HPC	HIGH PRESSURE CONDENSATE
12"	ROUND DUCT - IN INCHES	PC	PUMPED CONDENSATE
	DUCT SECTION - SUPPLY	RD	REFRIGERANT DISCHARGE
	DUCT SECTION - RETURN	RL	REFRIGERANT LIQUID
A B	WIDTH A x DEPTH B	RS	REFRIGERANT SUCTION
	TRANSITION SQUARE TO ROUND	HG	HOT GAS
R	RISE IN DUCT - IN DIRECTION OF AIRFLOW	VAC	VACUUM
D	DROP IN DUCT - IN DIRECTION OF AIRFLOW	CW	DOMESTIC COLD WATER
DN 24x12 UP	SUPPLY DUCT TURNING UP OR DOWN	TD	TRIPLE DUTY VALVE
DN 24x12 UP	RETURN DUCT TURNING UP OR DOWN		GLOBE VALVE
24x12 6" BOOT TAP 14x8	SUPPLY/RETURN RECTANGULAR MAIN RECTANGULAR BRANCH		BALL VALVE
24x12 6" BOOT TAP 14"	SUPPLY/RETURN RECTANGULAR MAIN ROUND BRANCH		GATE VALVE
18" CONICAL TEE 14"	SUPPLY/RETURN ROUND MAIN ROUND BRANCH		CONTROL VALVE
18" LATERAL 14"	SUPPLY/RETURN ROUND MAIN ROUND BRANCH		THREE WAY CONTROL VALVE
	MITERED ELBOW WITH TURNING VANES		CHECK VALVE
	SUPPLY DIFFUSER, REGISTER OR GRILLE		BALANCING VALVE
	RETURN REGISTER		BUTTERFLY VALVE
	EXHAUST GRILLE	PRV	RELIEF VALVE
	FIN TUBE RADIATION		PRESSURE REDUCING VALVE
	VALANCE		PRESSURE/TEMPERATURE TEST PLUG
A B C	REGISTER, GRILLE OR DIFFUSER TAG A = TYPE B = NECK SIZE C = CFM		SINGLE LINE PIPE CONTINUED
A B C D	LINEAR DIFFUSER TAG A = TYPE B = NECK SIZE C = DIFFUSER LENGTH D = CFM		DOUBLE LINE PIPE OR ROUND DUCT CONTINUED
FT-A B C D	FIN TUBE RADIATION TAG FT-A = TYPE B = FIN TUBE LENGTH C = ENCLOSURE LENGTH D = GPM		DOUBLE LINE RECTANGULAR DUCT CONTINUED
A B C	RADIANT CEILING PANEL TAG A = TYPE B = LENGTH C = GPM		AIR FLOW
A B C D	VALANCE TAG A = TYPE B = COIL SIZE C = COOLING GPM D = HEATING GPM		PIPE ANCHOR
	AIR TERMINAL UNIT AND TAG (OPTION 1)		PIPE GUIDE
A B C	AIR TERMINAL UNIT TAG (OPTION 2) A = UNIT NO. B = MAXIMUM CFM C = MINIMUM CFM		EXPANSION COMPENSATOR WITH GUIDES
			PRE-FAB EXPANSION LOOP
			STRAINER
			PRESSURE GAUGE
			THERMOMETER
			UNION
		V	AIR VENT
		TT	THERMOSTATIC TRAP
		FT	FLOAT & THERMOSTATIC TRAP
		TD	THERMODYNAMIC TRAP
		BT	BUCKET TRAP
			DIRECTION OF FLOW
			REDUCER
			CAP OR PLUG
			ELBOW DOWN
			ELBOW UP
			BOTTOM TAP
		AAD	AUTOMATIC AIR DAMPER
		FD	FIRE DAMPER
		SD	SMOKE DAMPER
		FSD	COMBINATION FIRE/SMOKE DAMPER
		BDD	BACK DRAFT DAMPER
		FC	FLEX CONNECTOR - DUCTWORK
		MD	MOTORIZED DAMPER
		BG	BLAST GATE
			VOLUME DAMPER
		SD	SUCTION DIFFUSER
			FLEXIBLE CONNECTOR - PIPING
			DRAIN VALVE WITH HOSE CONNECTION, CAP AND CHAIN
		FS	WATER FLOW SENSOR
		TS	WATER TEMPERATURE SENSOR
		SPS	STATIC PRESSURE SENSOR
		H	HUMIDISTAT
		S	TEMPERATURE SENSOR
		C	CARBON DIOXIDE SENSOR
		CO	CARBON MONOXIDE SENSOR
		G	GAS SENSOR
		T TE	PNEUMATIC/ELECTRIC THERMOSTAT
		TG SG	THERMOSTAT/SENSOR WITH GUARD
		DSD	DUCT SMOKE DETECTOR

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CAIGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.caigiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK · MICHAEL K. SUNDAY · LICENSED PROFESSIONAL ENGINEER · 077887-1

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

W&S Project No: N2190088

Drawing Title:

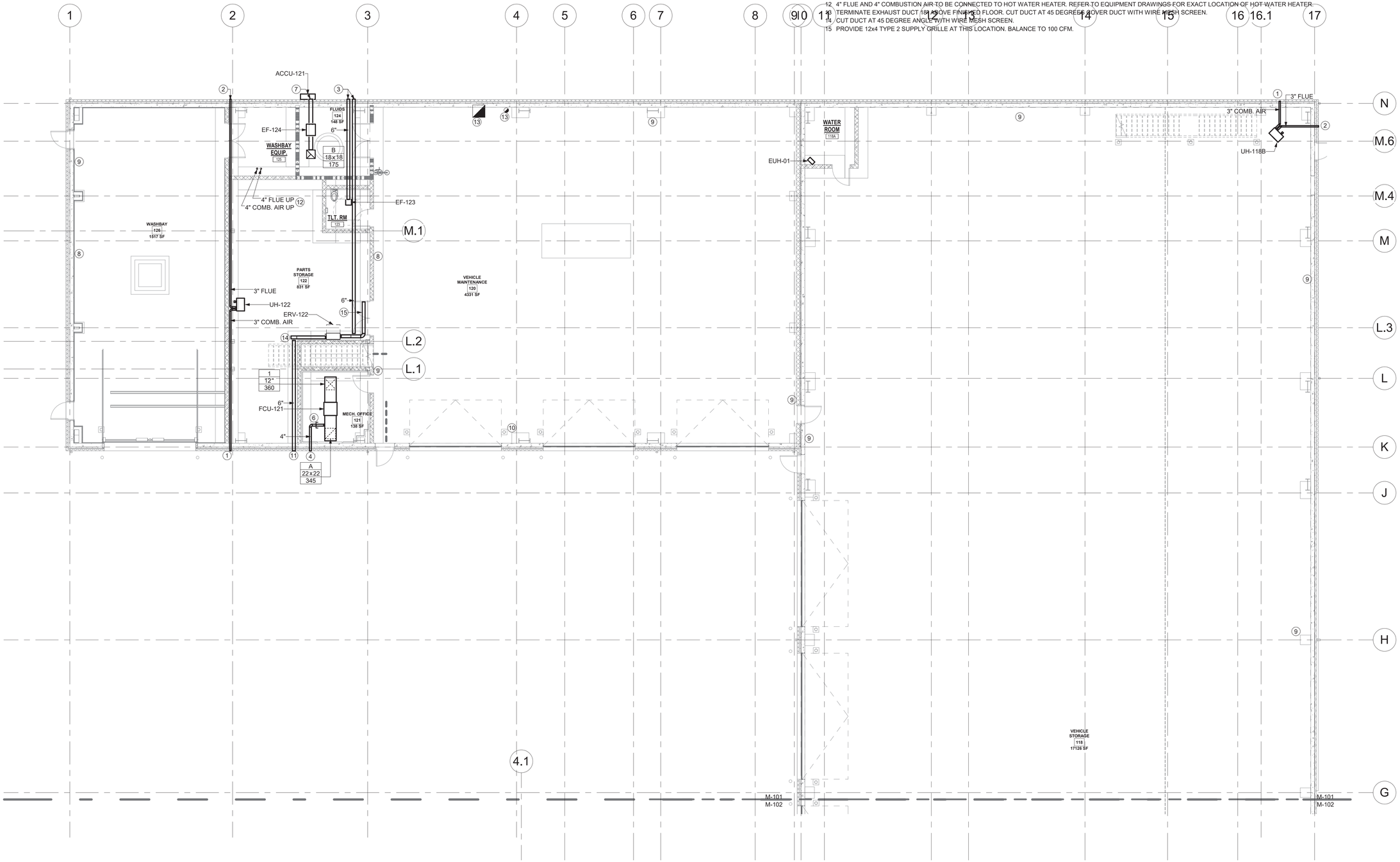
GENERAL NOTES AND SYMBOL LIST

Sheet Number:

M001

M-101 DRAWING NOTES

1 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
2 PROVIDE 3" DOUBLE WALL B VENT PER SPECIFICATION. TERMINATE WITH RAIN CAP.
3 PROVIDE 6" WALL CAP WITH BACKDRAFT DAMPER.
4 PROVIDE 4" WALL CAP.
6 BALANCE THE OUTSIDE AIR DUCT TO PROVIDE 25 CFM OF OUTDOOR AIR.
7 PROVIDE 8" WALL CAP WITH BACKDRAFT DAMPER.
8 PROVIDE HONEYWELL 301CC0 AND GAS DETECTION SYSTEM AT THIS LOCATION MOUNT 6'-0" ABOVE FINISHED FLOOR. PROVIDE ALARM LIGHT BAR ON TOP OF UNIT.
9 LOCATE HONEYWELL E3POINT SENSOR FOR GAS DETECTION SYSTEM WITH ALARM LEVEL LIGHTS AND HORN AT THIS LOCATION. SENSOR SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR. PROVIDE WIRING BACK TO HONEYWELL 301CC0 AND GAS DETECTION SYSTEM.
10 PROVIDE MONOXIVENT 6" DIAMETER 25' SPARE EXHAUST REEL AT THIS LOCATION.
11 PROVIDE 6" WALL CAP.
12 4" FLUE AND 4" COMBUSTION AIR TO BE CONNECTED TO HOT WATER HEATER. REFER TO EQUIPMENT DRAWINGS FOR EXACT LOCATION OF HOT WATER HEATER.
13 TERMINATE EXHAUST DUCT 18" ABOVE FINISHED FLOOR. CUT DUCT AT 45 DEGREE & COVER DUCT WITH WIRE MESH SCREEN.
14 CUT DUCT AT 45 DEGREE ANGLE WITH WIRE MESH SCREEN.
15 PROVIDE 12x4 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 100 CFM.



1 FIRST FLOOR DUCTWORK PLAN - AREA A
1/8" = 1'-0"

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY
220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson
WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse
433 RIVER STREET SUITE 4001 TROY, NEW YORK 12180 (518) 326-3121 www.meengineering.com

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK · MICHAEL K. SUNDAY · 077887-1 · LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

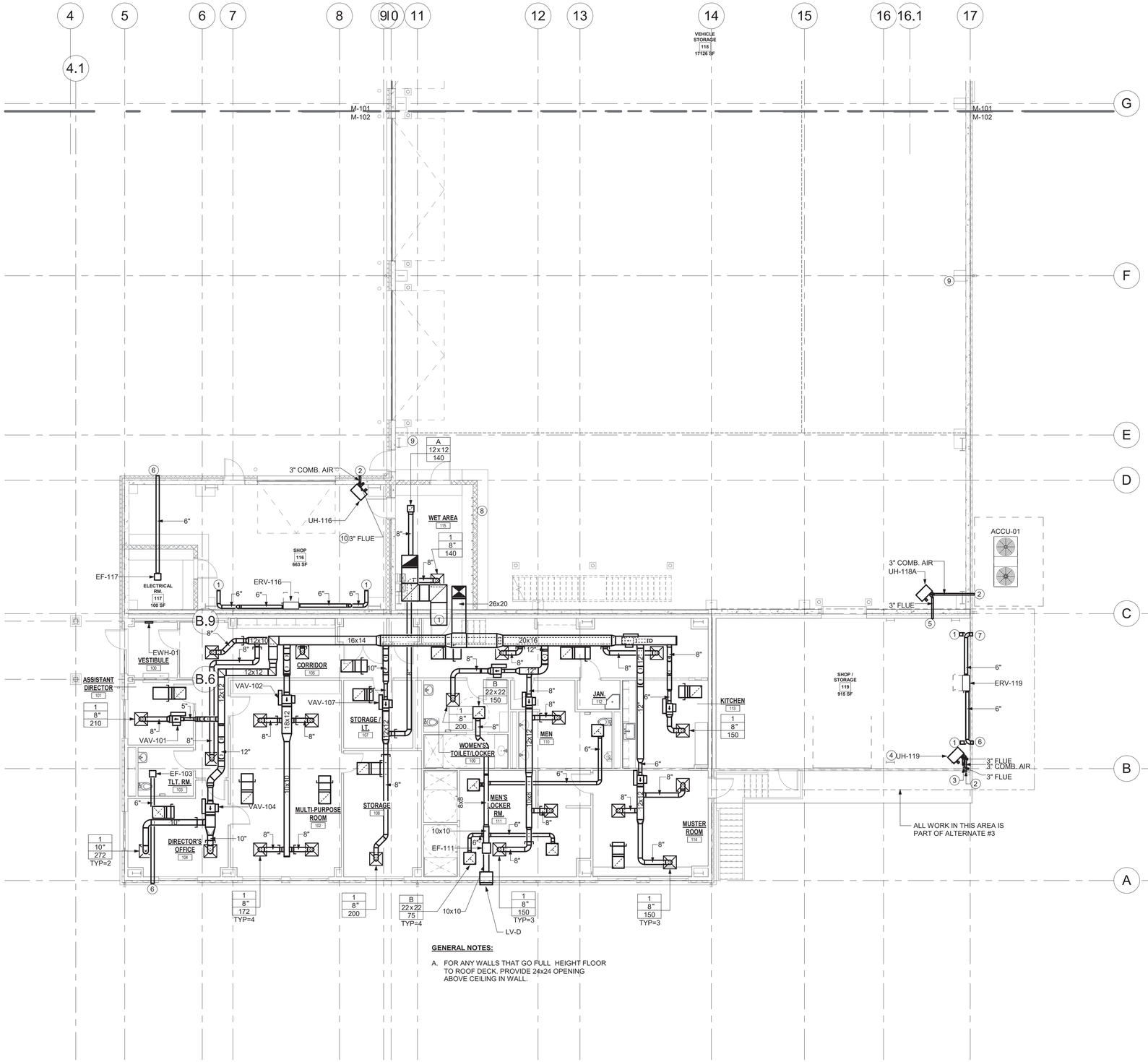
Date:	APRIL 7, 2022
Drawn By:	JDH
Reviewed By:	TES
Approved By:	BAB
W&S Project No:	N2190088

Drawing Title:

FIRST FLOOR DUCTWORK PLAN - AREA A

Sheet Number:

M101



M-102 DRAWING NOTES

1. CUT DUCT AT 45 DEGREE ANGLE WITH WIRE MESH SCREEN.
2. PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
3. IF ALTERNATE IS NOT PICKED PROVIDE 3" DOUBLE WALL B VENT PER SPECIFICATION. TERMINATE WITH RAIN CAP.
4. UH-119 IS PART OF ALTERNATE __.
5. PROVIDE 3" DOUBLE WALL B VENT PER SPECIFICATION. TERMINATE WITH RAIN CAP.
6. PROVIDE 6" WALL CAP WITH BACKDRAFT DAMPER.
7. PROVIDE 6" WALL CAP.
8. PROVIDE HONEYWELL 301CC0 AND GAS DETECTION SYSTEM AT THIS LOCATION MOUNT 6'-0" ABOVE FINISHED FLOOR. PROVIDE ALARM LIGHT BAR ON TOP OF UNIT.
9. LOCATE HONEYWELL E3POINT SENSOR FOR GAS DETECTION SYSTEM WITH ALARM LEVEL LIGHTS AND HORN AT THIS LOCATION. SENSOR SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR. PROVIDE WIRING BACK TO HONEYWELL 301CC0 AND GAS DETECTION SYSTEM.
10. PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.

GENERAL NOTES:

A. FOR ANY WALLS THAT GO FULL HEIGHT FLOOR TO ROOF DECK. PROVIDE 24x24 OPENING ABOVE CEILING IN WALL.

1 FIRST FLOOR DUCTWORK PLAN - AREA B
1/8" = 1'-0"

2 BASEMENT FLOOR - HVAC PLAN (ALTERNATE #3)
1/8" = 1'-0"

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SUSSMAN
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Date: APRIL 7, 2022
Drawn By: JDH
Reviewed By: TES
Approved By: BAB
W&S Project No: N2190088

Drawing Title:

FIRST FLOOR & BASEMENT DUCTWORK PLAN - AREA A

Sheet Number:

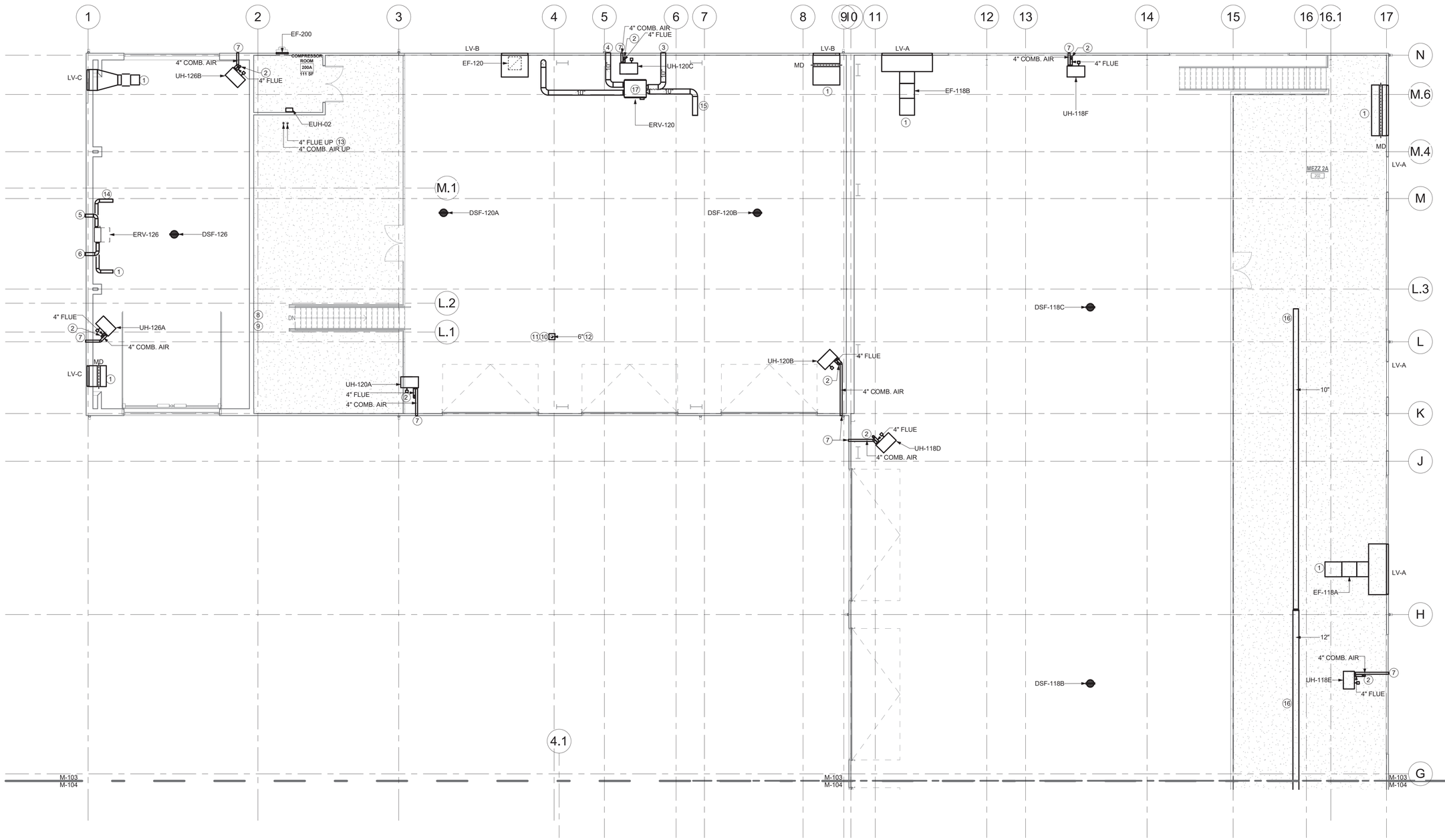
M102

M-103 DRAWING NOTES

1 CUT DUCT AT 45 DEGREE ANGLE WITH WIRE MESH SCREEN.
2 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
3 PROVIDE 10" WALL CAP WITH BACKDRAFT DAMPER.
4 PROVIDE 10" WALL CAP.
5 PROVIDE 6" WALL CAP WITH BACKDRAFT DAMPER.
6 PROVIDE 6" WALL CAP.
7 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.

M-103 DRAWING NOTES

8 PROVIDE HONEYWELL 301CC0 AND GAS DETECTION SYSTME AT THIS LOCATION MOUNT 6'-0" ABOVE FINISHED FLOOR.
9 LOCATE HONEYWELL E3POINT SENSOR FOR GAS DETECTION SYSTEM WITH ALARM LEVEL LIGHTS AND HORN AT THIS LOCATION. SENSOR SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR.
10 PROVIDE MONOXIVENT SPRING OPERATED REEL MODEL 9000-W, 6" DIAMETER, 36' HOSE LENGTH.
11 PROVIDE MONOXIVENT D20 FAN, 208V 3 PHASE MOTOR. SIZE 900 CFM 6" ESP.
12 6" DUCT UP FROM EXHAUST REEL AND ASSOCIATED FAN. TERMINATE ABOVE ROOF WITH GOOSENECK.
13 TERMINATE 4" FLUE AND 4" COMBUSTION AIR IN A CONCENTRIC VENT ABOVE ROOF.
14 PROVIDE 12x4 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 100 CFM.
15 PROVIDE 12x8 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 250 CFM.
16 PROVIDE 12x8 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 300 CFM.
17 MOUNT ERV BELOW UNIT HEATER.



1 MEZZANINE FLOOR DUCTWORK PLAN - AREA A
1/8" = 1'-0"

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY
220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson
WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse
RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SULLIVAN
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Date:	APRIL 7, 2022
Drawn By:	JDH
Reviewed By:	TES
Approved By:	BAB
W&S Project No:	N2190088

Drawing Title:

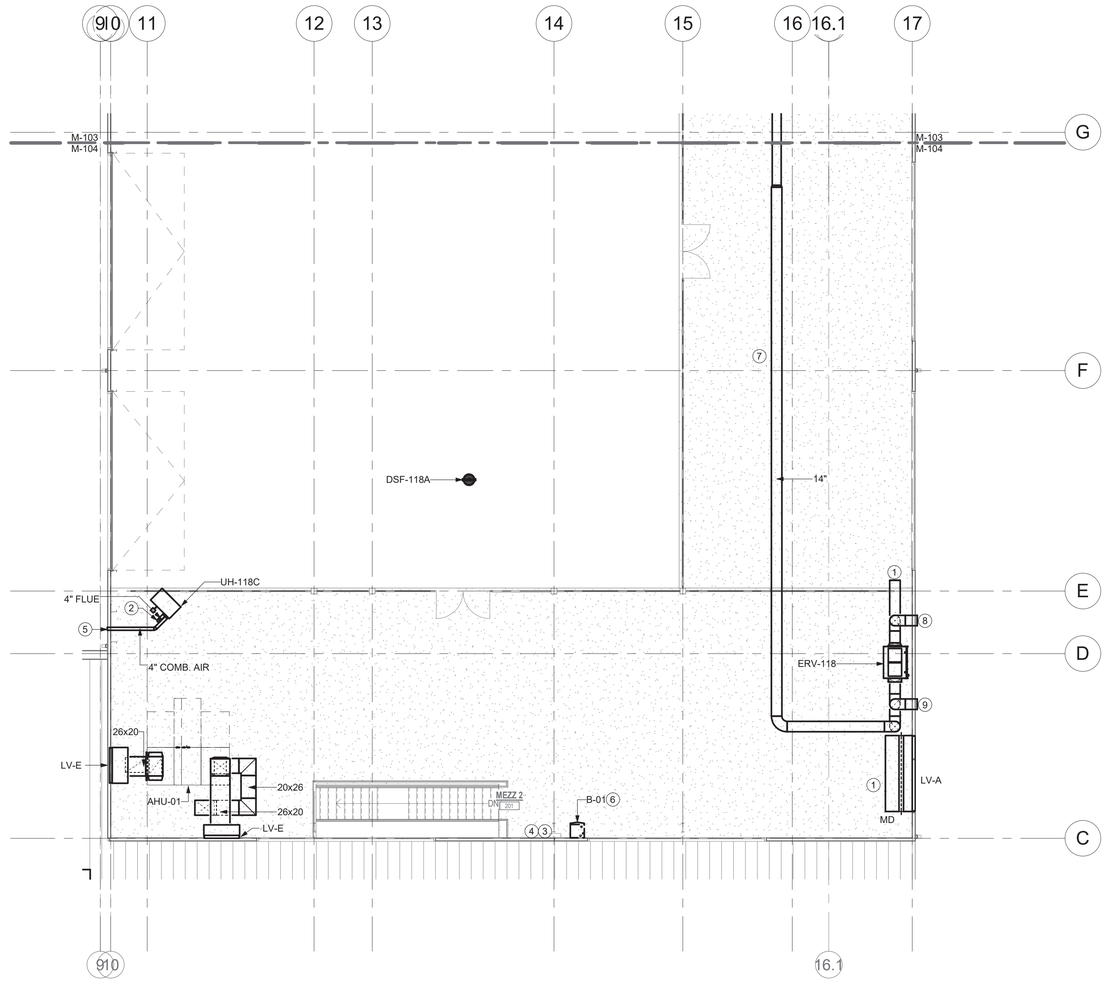
MEZZANINE DUCTWORK PLAN - AREA A

Sheet Number:

M103

M-104 DRAWING NOTES

1 CUT DUCT AT 45 DEGREE ANGLE WITH WIRE MESH SCREEN.
2 PROVIDE 3" DOUBLE WALL B VENT PER SPECIFICATION. TERMINATE WITH RAIN CAP.
3 PROVIDE HONEYWELL 301CC0 AND GAS DETECTION SYSTME AT THIS LOCATION MOUNT 6'-0" ABOVE FINISHED FLOOR.
4 LOCATE HONEYWELL E3POINT SENSOR FOR GAS DETECTION SYSTEM WITH ALARM LEVEL LIGHTS AND HORN AT THIS LOCATION. SENSOR SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR.
5 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
6 TERMINATE 3" COMBUSTION AIR AND 3" FLUE FROM B-01 IN CONCENTRIC VENT ON ROOF.
7 PROVIDE 12x8 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 300 CFM.
8 PROVIDE 14" WALL CAP.
9 PROVIDE 14" WALL CAP WITH BACKDRAFT DAMPER.



1 MEZZANINE FLOOR DUCTWORK PLAN - AREA B
1/8" = 1'-0"

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SUNDMAN
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Date: APRIL 7, 2022
Drawn By: JDH
Reviewed By: TES
Approved By: BAB
W&S Project No: N2190088

Drawing Title:

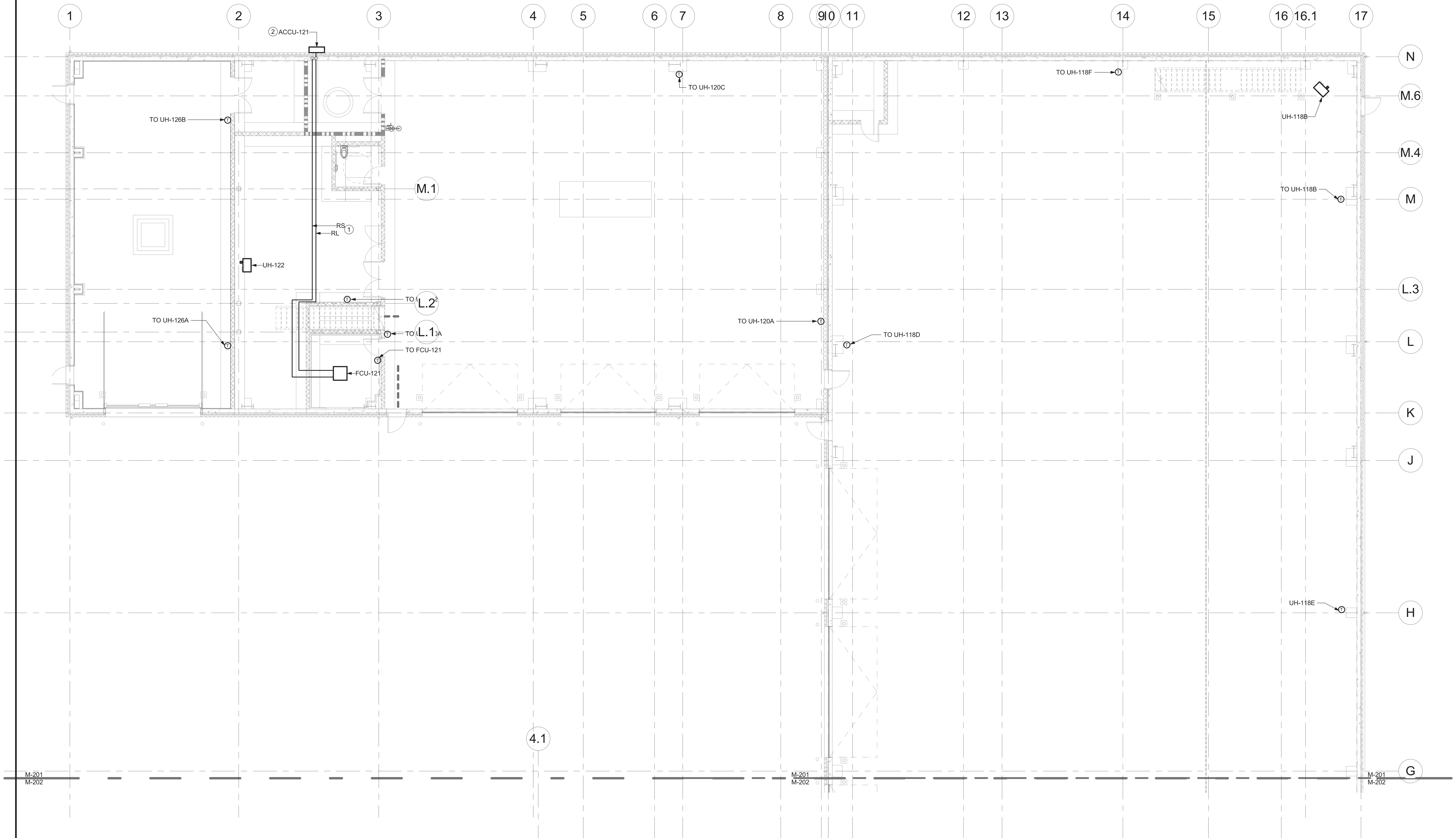
MEZZANINE DUCTWORK PLAN - AREA B

Sheet Number:

M104

M-201 DRAWING NOTES

1 RS/RL PIPING TO BE SIZED BASED ON MANUFACTURER RECOMENDATION.



1 FIRST FLOOR PIPING PLAN - AREA A
1/8" = 1'-0"

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse
433 STATE STREET, SUITE 410
SCHENECTADY, NY 12305
518.533.2171
www.meengineering.com

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SULLIVAN
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

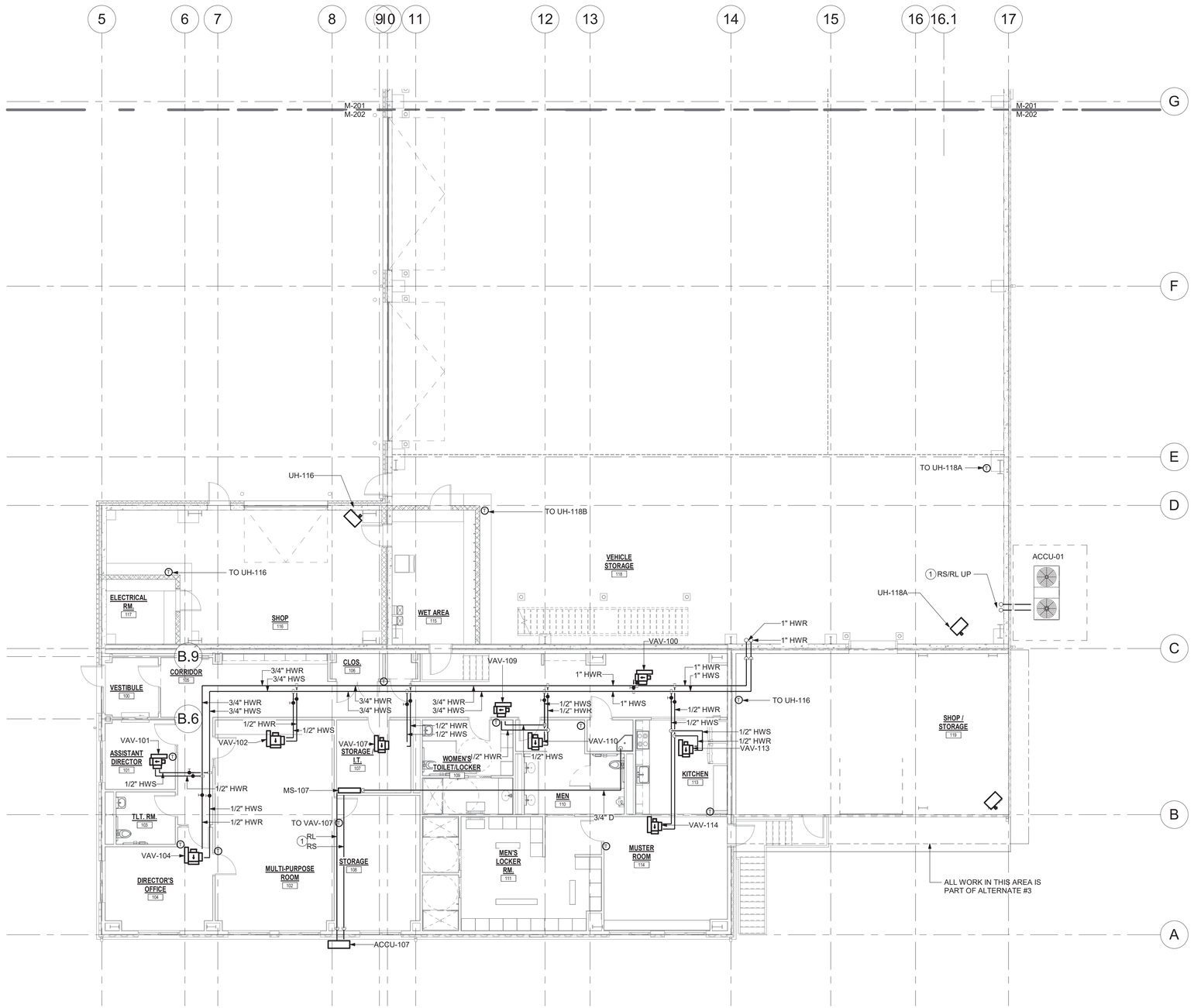
Date:	APRIL 7, 2022
Drawn By:	JDH
Reviewed By:	TES
Approved By:	BAB
W&S Project No:	N2190088

Drawing Title:

FIRST FLOOR PIPING PLAN - AREA A

Sheet Number:

M201



1 FIRST FLOOR PIPING PLAN - AREA B

1/8" = 1'-0"

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SUNDAY
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

0' 4' 8' 16'

SCALE: 1/8" = 1'-0"

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

W&S Project No: N2190088

Drawing Title:

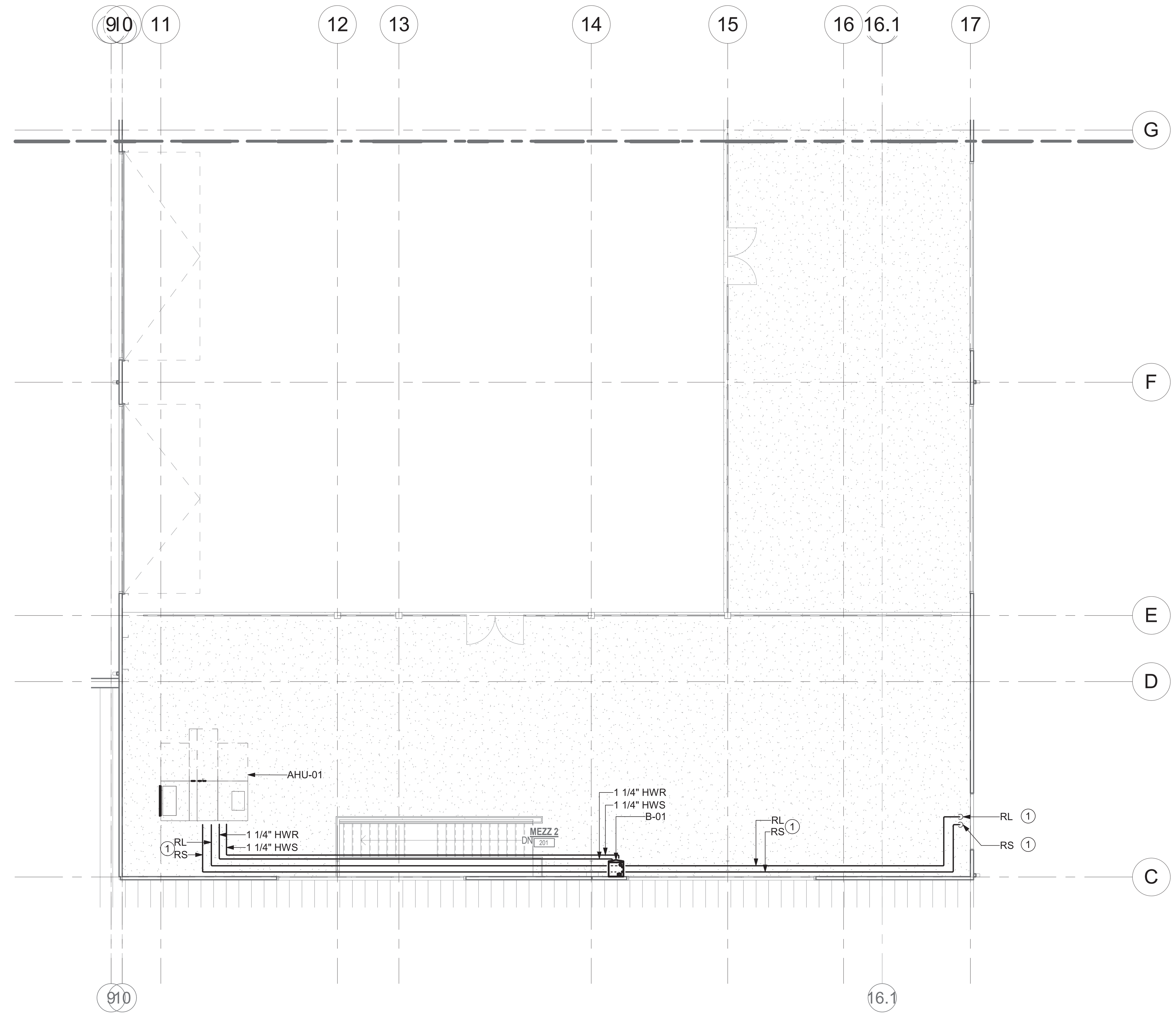
FIRST FLOOR PIPING PLAN - AREA B

Sheet Number:

M202

M-204 DRAWING NOTES

1 RS/RL PIPING TO BE SIZED BASED ON MANUFACTURER RECOMENDATION.



1 MEZZANINE FLOOR PIPING PLAN - AREA B
1/8" = 1'-0"

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

M/E ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SULLIVAN
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

0' 4' 8' 16'
SCALE: 1/8" = 1'-0"

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

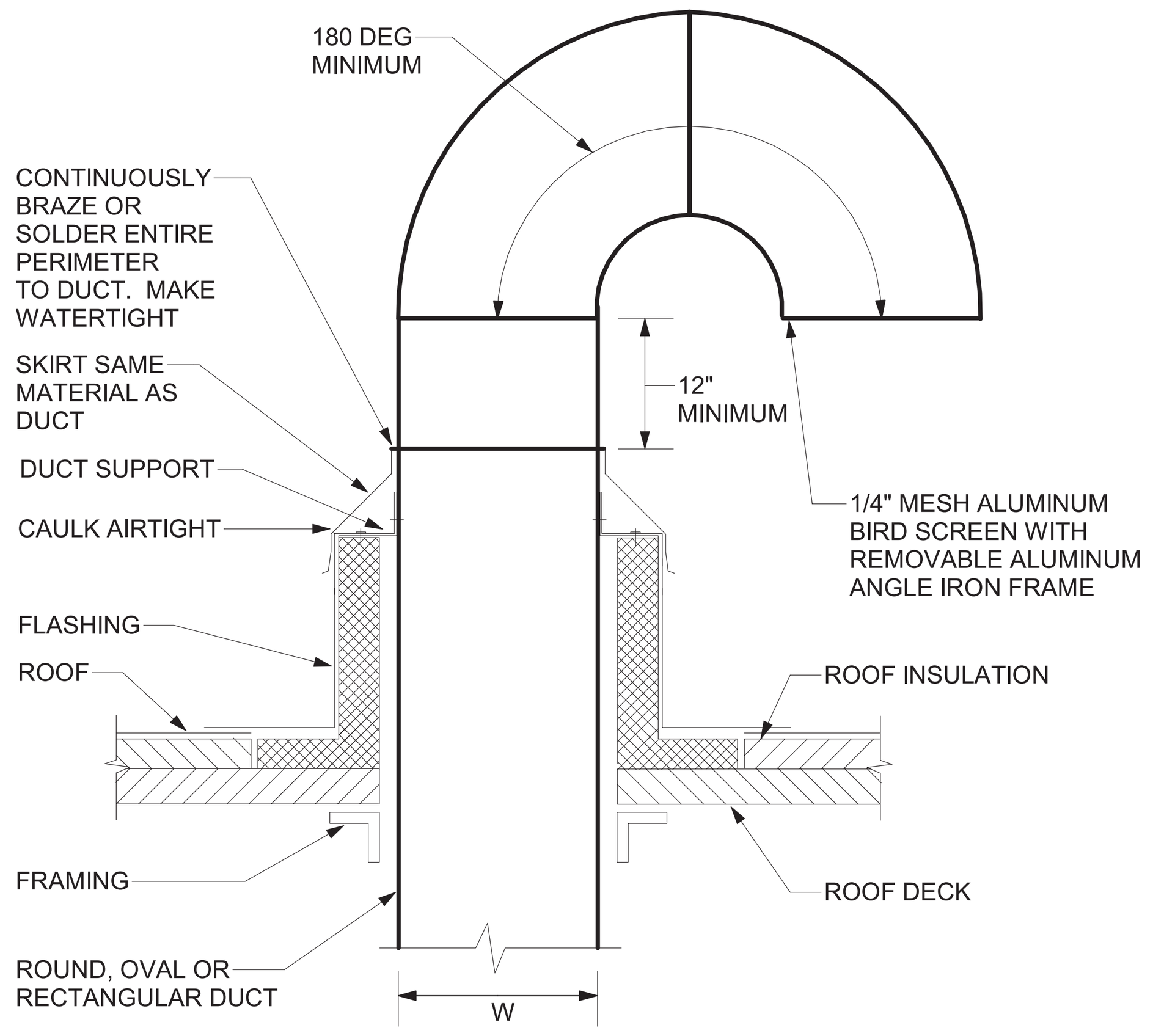
W&S Project No: N2190088

Drawing Title:

MEZZANINE FLOOR PIPING PLAN - AREA B

Sheet Number:

M204



DETAIL NOTES:

A. **[G.C. TO]** PROVIDE ROOF OPENING, FRAMING AND FLASHING.

B. **[M.C. TO]** LOCATE, SET AND SECURE CURB.

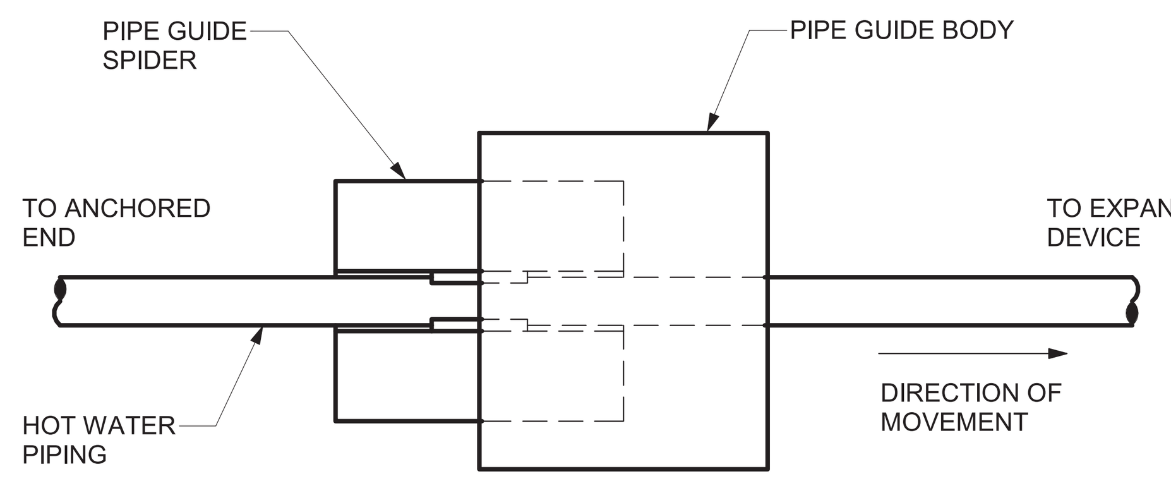
C. PROVIDE SHIMS WHERE REQUIRED TO LEVEL CURB.

D. FACE EAST UNLESS INDICATED OTHERWISE ON PLANS.

E. PROVIDE WIND RESTRAINT PER SPECIFICATION SECTION 230550-WIND RESTRAINT FOR HVAC SYSTEMS **[230529-SEISMIC AND WIND RESTRAINT FOR MECHANICAL SYSTEMS]**.

1 GOOSENECK VENT DETAIL

NOT TO SCALE



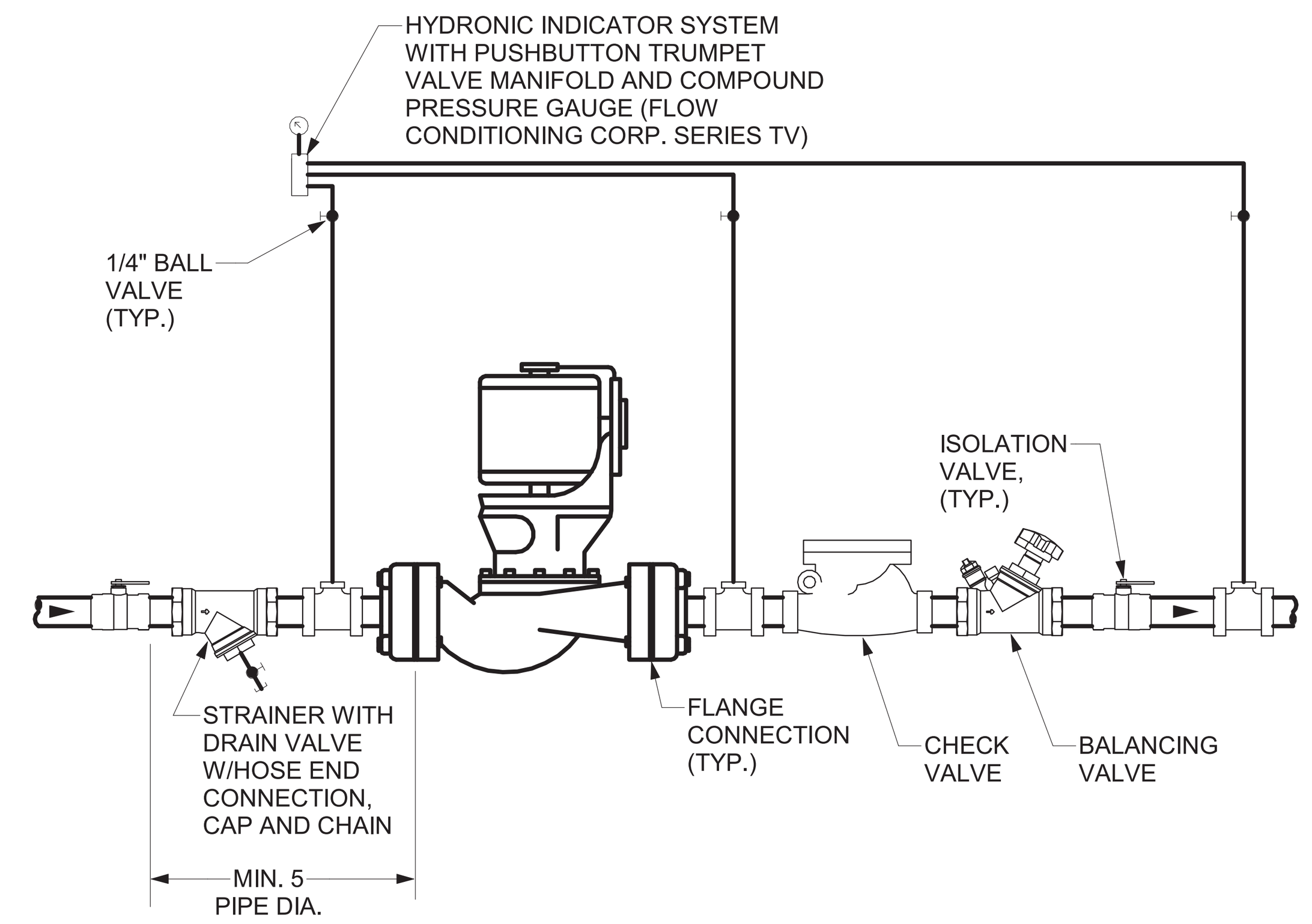
DETAIL NOTES:

A. PRE-SET EXISTING PIPE GUIDE TO 1/2 OF THE ALLOWABLE MOVEMENT.

B. SECURELY ANCHOR NEW GUIDES TO BUILDING STRUCTURE.

2 CORRIDOR PIPE GUIDE DETAIL

NOT TO SCALE



DETAIL NOTES:

A. PROVIDE UNION ON PUMP INLET AND OUTLET IF PUMP IS NOT FLANGED.

C. INSTALL PUMP WITH SHAFT HORIZONTAL. PIPING MAY BE INSTALLED HORIZONTAL, AS SHOWN, OR VERTICAL DEPENDING ON SITE CONDITIONS.

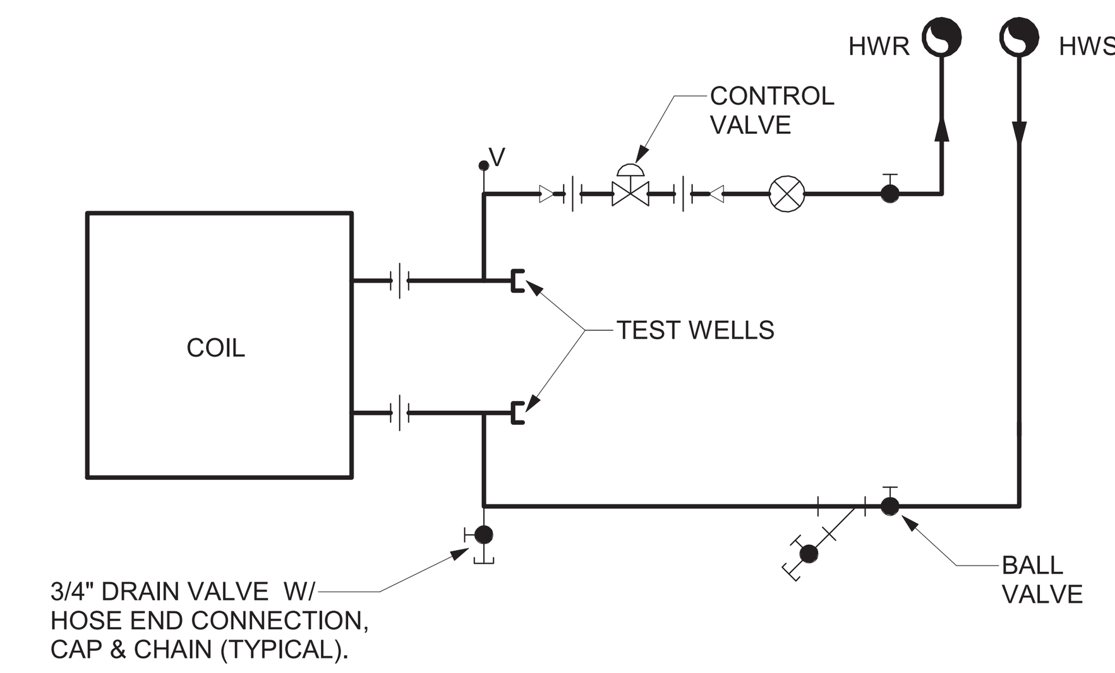
D. INSTALL CHECK VALVE HORIZONTALLY, OR VERTICALLY WITH FLOW UPWARD. INSTALL STRAINER HORIZONTALLY.

E. WHERE PIPING IS GREATER THAN 2", PROVIDE A TRIPLE DUTY VALVE IN PLACE OF CHECK VALVE, FLOW BALANCER AND SHUTOFF VALVE. LOCATE TRIPLE DUTY VALVE OR BALANCE VALVE ASSEMBLY MINIMUM TEN (10) PIPE DIAMETERS FROM PUMP OUTLET.

F. OMIT BALANCING VALVE ON VARIABLE FLOW SYSTEMS.

3 INLINE PUMP PIPING DETAIL

NOT TO SCALE



DETAIL NOTES:

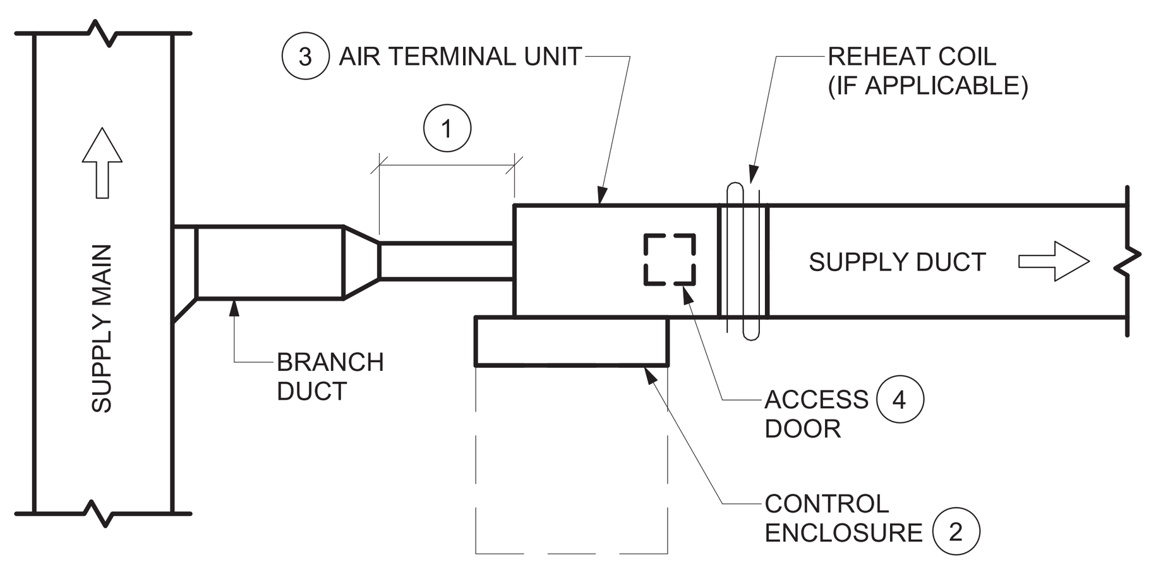
A. ARRANGE PIPING FOR REMOVAL OF COIL WITHOUT DISTURBING PIPING AHEAD OF UNIONS.

B. PROVIDE DUCT ACCESS DOOR UPSTREAM OF COIL.

C. PIPE COIL FOR COUNTERFLOW ARRANGEMENT IF COIL IS MORE THEN ONE ROW. HOT WATER SUPPLY CONNECTION SHALL BE ON THE DISCHARGE AIR SIDE OF THE COIL.

4 TERMINAL REHEAT COIL PIPING DETAIL - HOT WATER

NOT TO SCALE

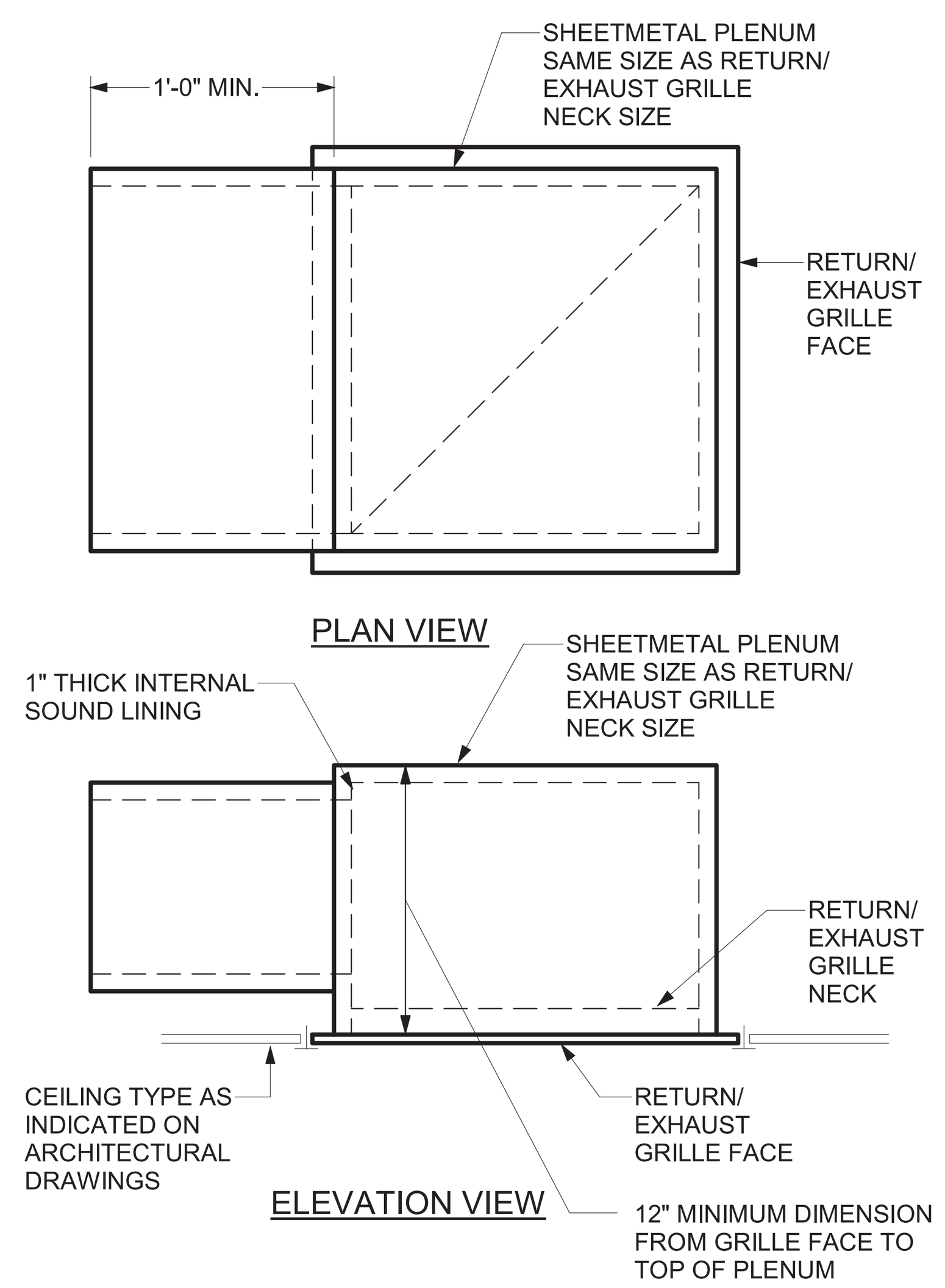


KEYED NOTES:

1. RIGID STRAIGHT DUCTWORK UPSTREAM OF THE TERMINAL UNIT SHALL BE A MINIMUM OF 3 TIMES THE DIAMETER OF INLET. NOT TO EXCEED 5'-0" TOTAL IN LENGTH.
2. MAINTAIN MINIMUM 1'-6" SERVICE CLEARANCE IN FRONT OF ENCLOSURE TO ALLOW FOR SERVICE/ACCESS.
3. COMPONENT ARRANGEMENT MAY VARY BY MANUFACTURER. PROVIDE INSULATION VAPOR BARRIER AS SPECIFIED.
4. ACCESS DOOR TO BE LOCATED AT THE BOTTOM OF THE UNIT. CONTRACTOR TO COORDINATE COIL AND CONTROL ENCLOSURE HANDING. ROTATING UNIT IN FIELD SUCH THAT ACCESS DOOR IS ON TOP OF UNIT IS NOT ACCEPTABLE.

5 VAV BOX DETAIL

NOT TO SCALE



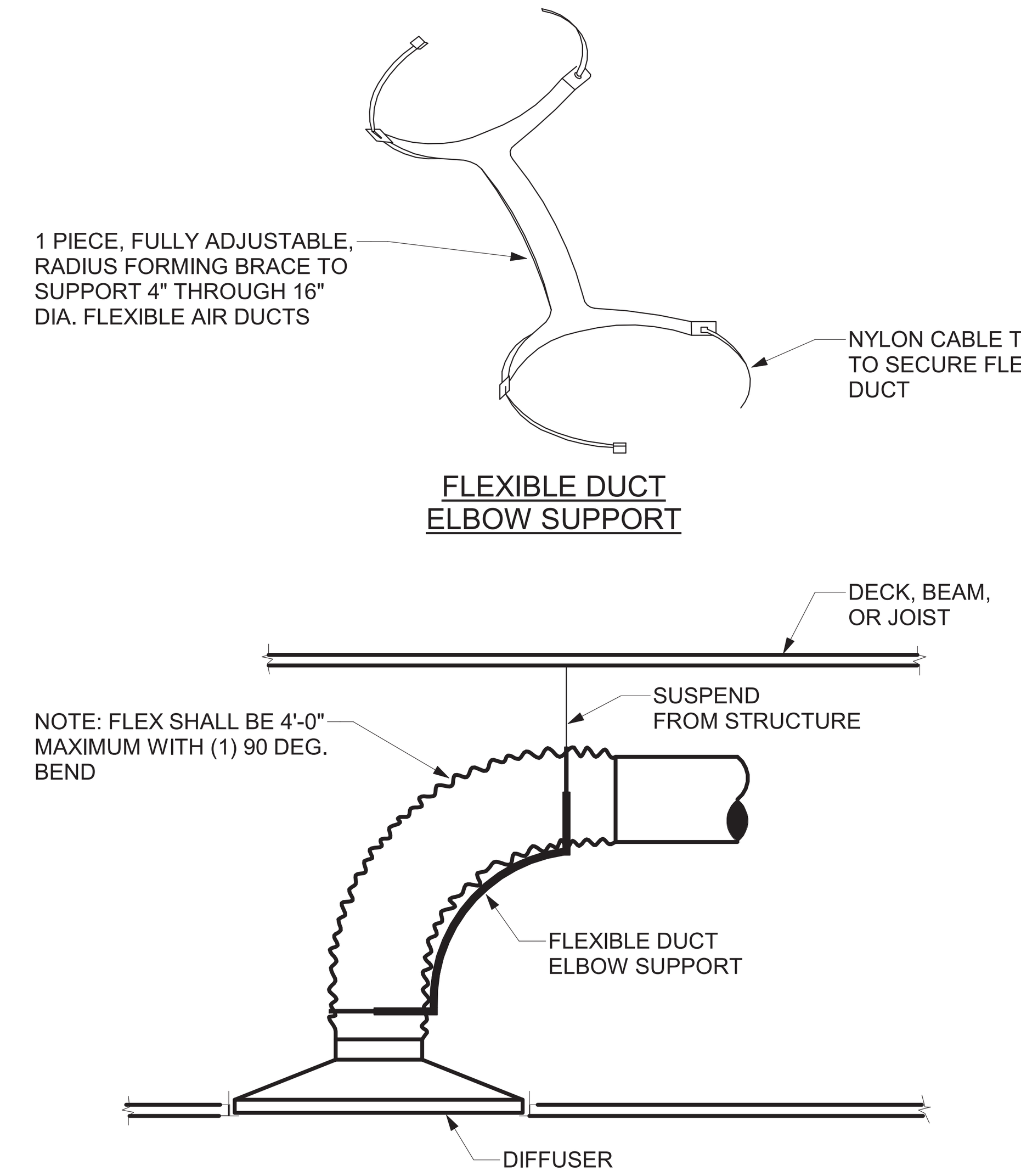
DETAIL NOTES:

A. PAINT INSIDE OF PLENUM BOX FLAT BLACK IF INTERNAL SOUND LINING IS NOT SPECIFIED.

B. ALSO APPLICABLE TO REGISTERS.

6 RETURN/EXHAUST GRILLE PLENUM DETAIL - NON-DUCTED

NOT TO SCALE



7 SUPPLY AIR DIFFUSER DETAIL - RADIUS FLEXIBLE DUCT - BRACE

NOT TO SCALE

Project:

VILLAGE OF ARDSLEY, NY

VILLAGE OF ARDSLEY NEW YORK 1896

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD, VILLAGE OF ARDSLEY, NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGi Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

WE ENGINEERING
Mechanical/Electrical Engineering Consultants

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK MICHAEL K. SULLIVAN 077887-1 LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

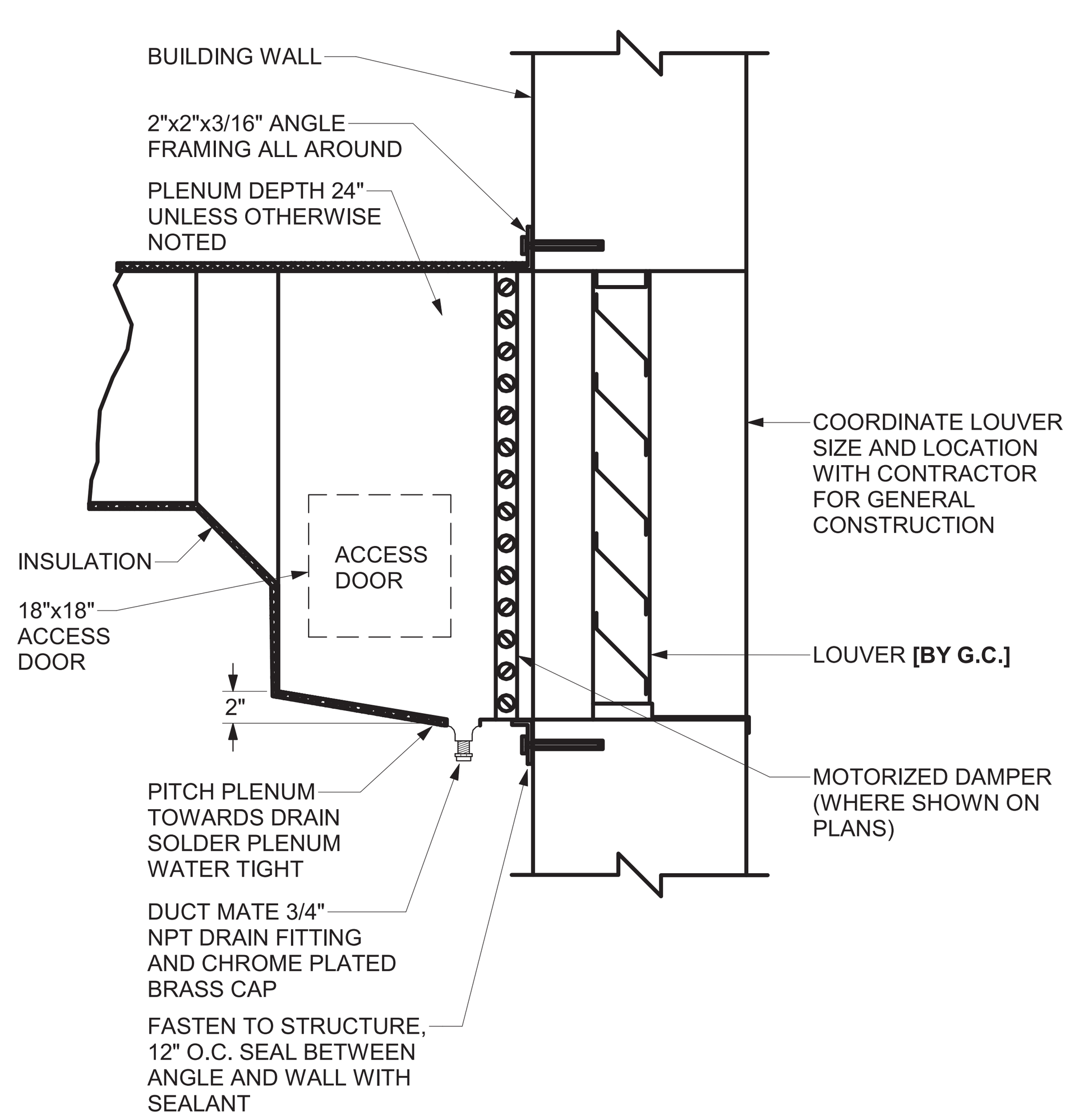
W&S Project No: N2190088

Drawing Title:

DETAILS

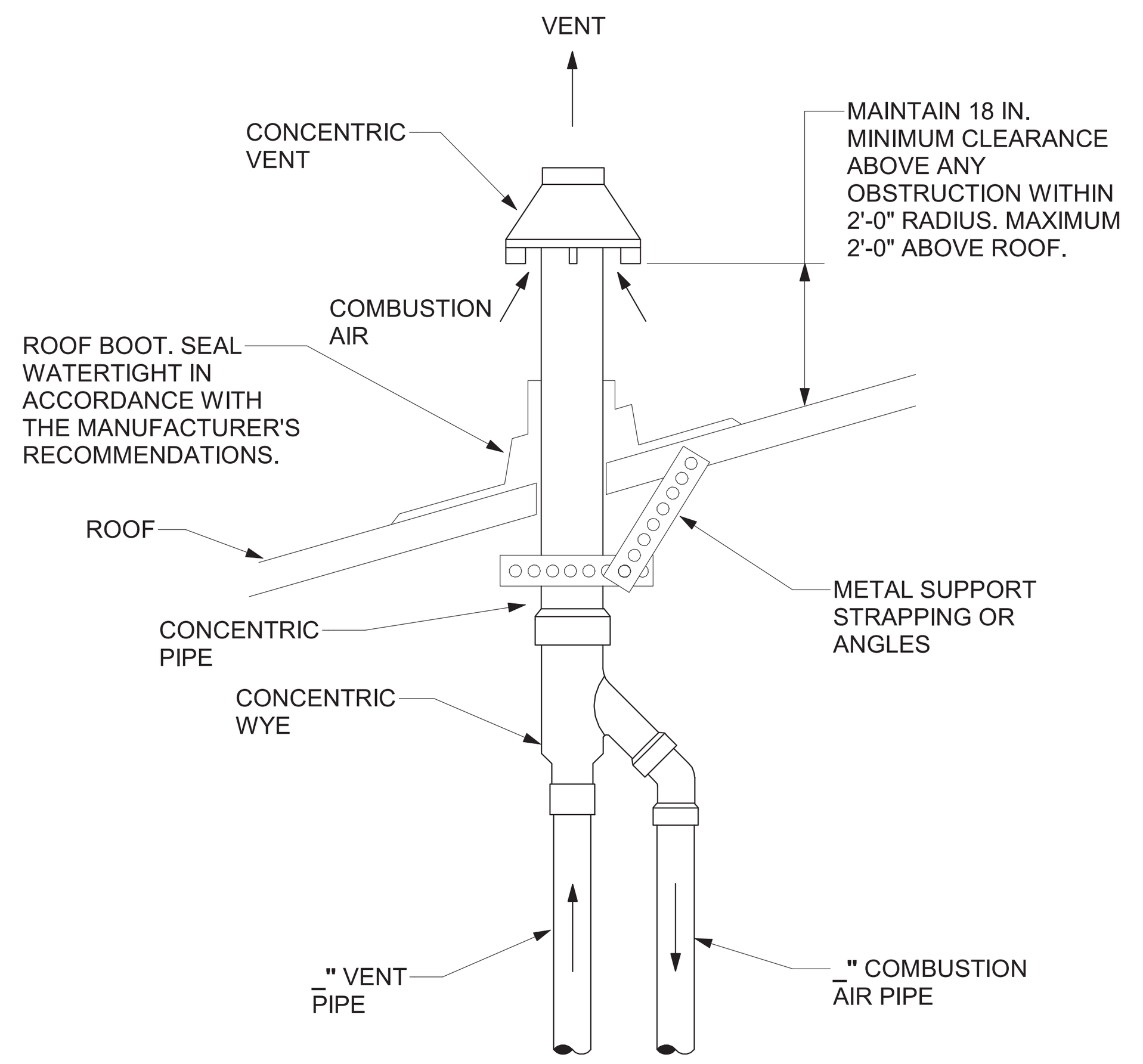
Sheet Number:

M500



1 LOUVER PLENUM DETAIL

NOT TO SCALE

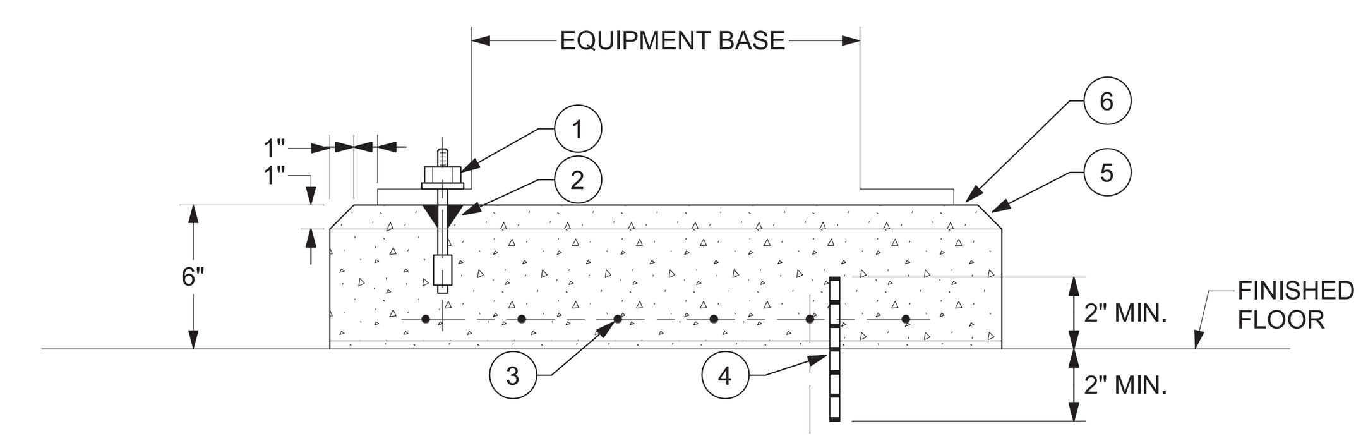


DETAIL NOTES:

A. CONCENTRIC WYE, CONCENTRIC PIPE AND CONCENTRIC VENT TERMINATION ARE PART OF A MANUFACTURED KIT.

2 CONCENTRIC VENT TERMINATION KIT DETAIL - ROOF

NOT TO SCALE

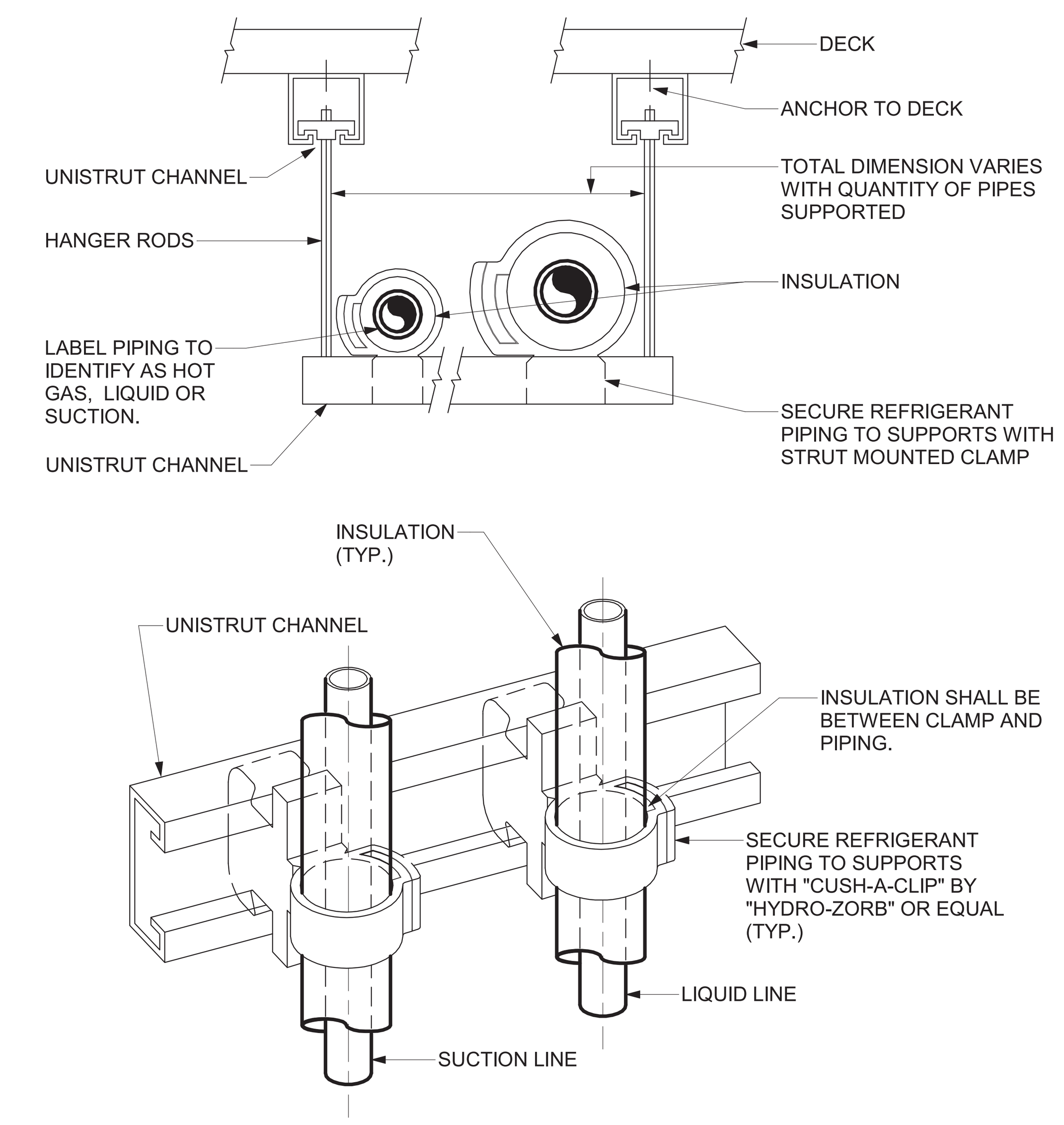


DETAIL NOTES:

1. ANCHOR BOLT, SIZE & LOCATION AS REQUIRED TO MATCH EQUIPMENT BASE.
2. PLASTIC SLEEVE & ANCHOR.
3. #3 REINFORCING BARS, 12" O.C. EACH WAY.
4. #4 DOWEL, 12" O.C.
5. CHAMFER.
6. CONCRETE PAD 3,000 PSI CONCRETE, LENGTH & WIDTH, 6" GREATER THAN THE EQUIPMENT BASE PLATE.

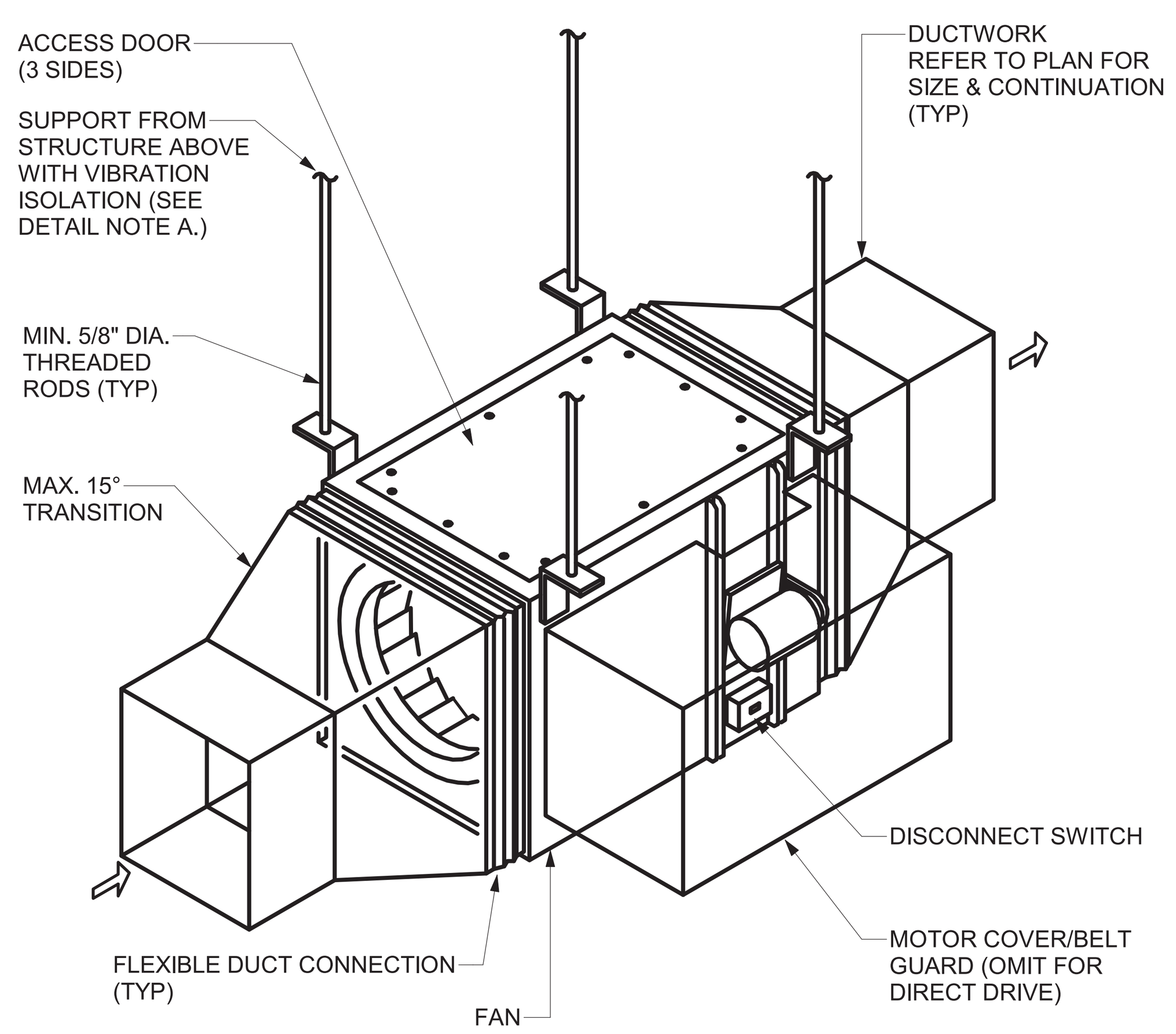
3 CONCRETE EQUIPMENT BASE DETAIL

NOT TO SCALE



4 REFRIGERANT PIPE SUPPORT DETAIL

NOT TO SCALE



DETAIL NOTES:

A. VIBRATION ISOLATORS SHALL BE PROVIDED AS SPECIFIED AND IN ACCORDANCE WITH THE FAN MANUFACTURER'S RECOMMENDATIONS **[AND SPECIFICATION 230548 - VIBRATION ISOLATION OF MECHANICAL SYSTEMS.]**

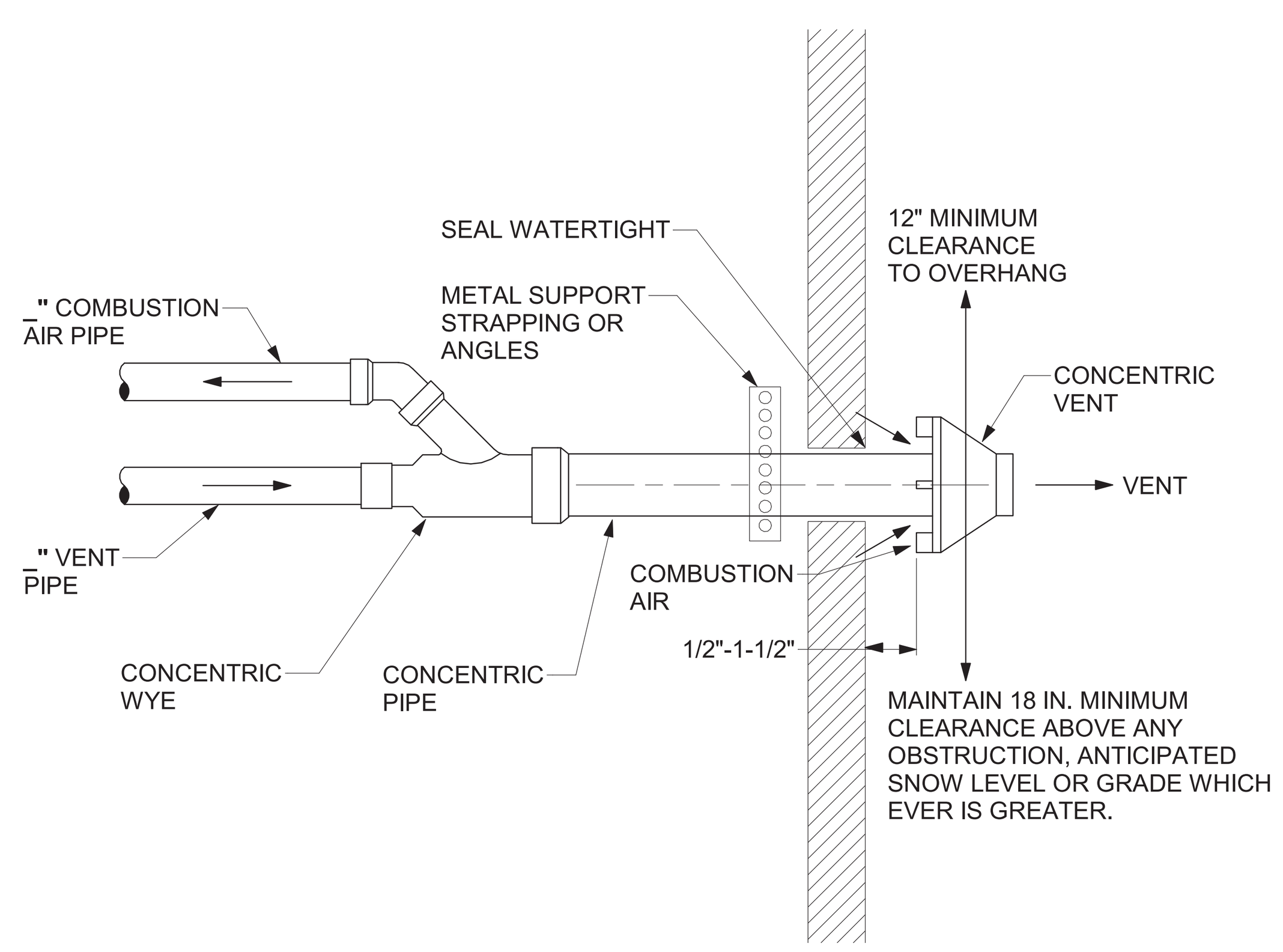
B. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS EXPLICITY.

C. ORIENT SUCH THAT ACCESS TO MOTOR IS NOT OBSTRUCTED.

D. DETAIL ABOVE DEPICTS SQUARE TYPE IN-LINE EXHAUST FAN. TUBULAR TYPE IS SIMILAR.

5 INLINE FAN DETAIL

NOT TO SCALE

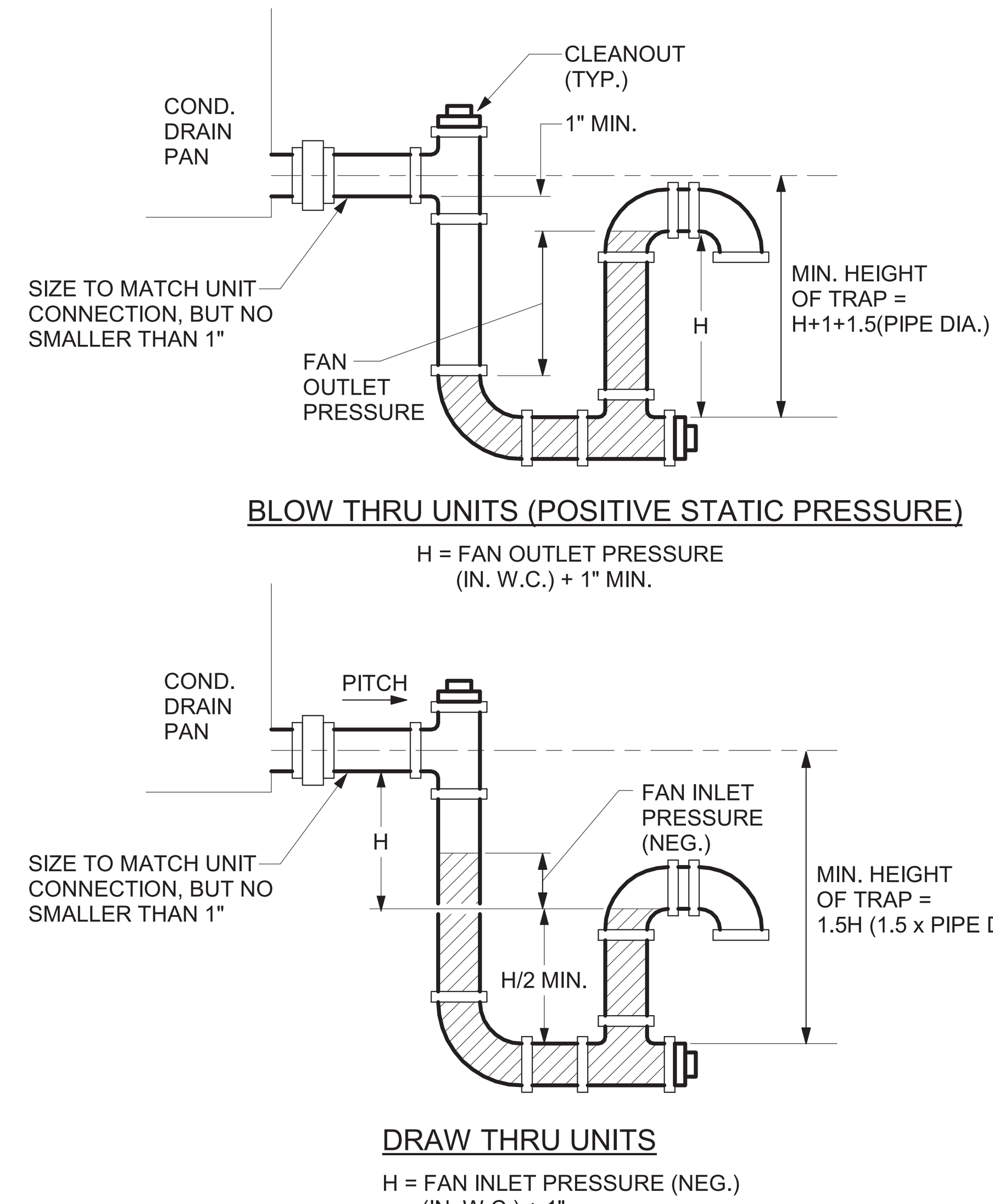


DETAIL NOTES:

A. CONCENTRIC WYE, CONCENTRIC PIPE AND CONCENTRIC VENT TERMINATION ARE PART OF A MANUFACTURED KIT.

6 CONCENTRIC VENT TERMINATION KIT DETAIL - SIDEWALL

NOT TO SCALE



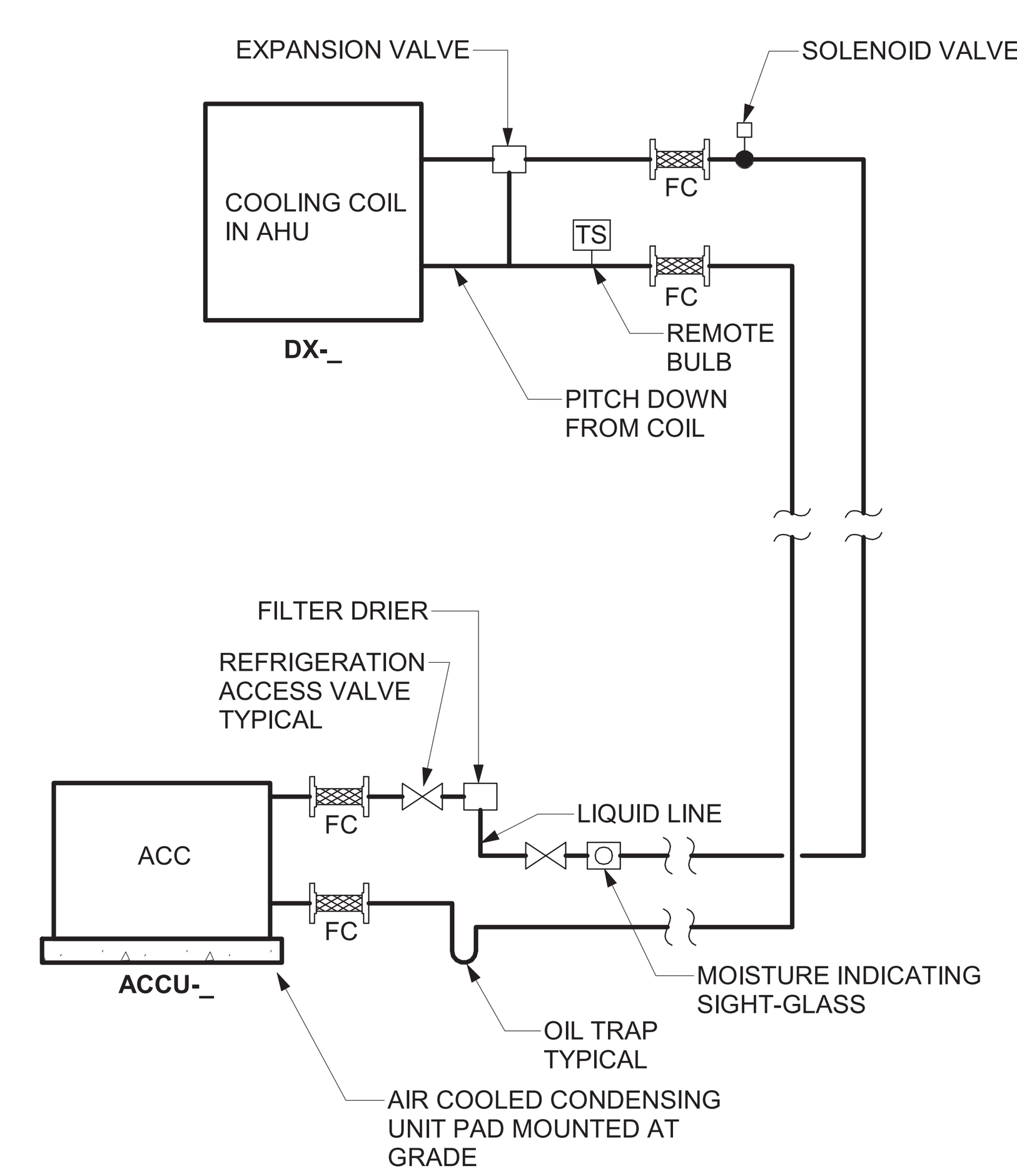
DETAIL NOTES:

A. AS AN ALTERNATE, IT IS ACCEPTABLE TO PIPE THE TRAP EXACTLY AS SHOWN IN THE MANUFACTURER'S INSTALLATION MANUAL.

B. SEE SPECIFICATIONS FOR PIPE TYPE.

7 ROOFTOP UNIT CONDENSATE DRAIN TRAP DETAIL

NOT TO SCALE



8 DX PIPING CONNECTIONS DETAIL - CONDENSING UNIT BELOW COIL

NOT TO SCALE

Project:

VILLAGE OF ARDSLEY, NY

VILLAGE OF ARDSLEY NEW YORK 1896

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD, VILLAGE OF ARDSLEY, NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919 — 56 Lafayette Avenue, Suite 350, White Plains, NY 10603, (914) 682-9423, www.calgiconstruction.com

ME ENGINEERING — Mechanical/Electrical Engineering Consultants

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK — MICHAEL K. SULLIVAN — 077887-1 — LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

W&S Project No: N2190088

Drawing Title:

DETAILS

Sheet Number:

M501

AIR HANDLING UNIT SCHEDULE - DX /HOT WATER

UNIT NO.	LOCATION	SERVICE	SUPPLY FAN				FAN CHARACTERISTICS					MOTOR		COOLING COIL (DX)								HEATING COIL (HOT WATER)			WATER SIDE				
			AIR FLOW (CFM)	MIN O.A. (CFM)	EXT. STATIC (In. WC)	TOTAL STATIC (In. WC)	TYPE	FAN NO. & MIN DIA.	MAX BHP	FAN RPM	DRIVE	HP	STARTER	TOTAL CAPACITY (MBH)	SENS CAPACITY (MBH)	EAT (DEG. F) DB	EAT (DEG. F) WB	LAT (DEG. F) DB	LAT (DEG. F) WB	FACE VEL (FPM)	ROWS	AIR P.D. (In. WC)	TYPE	CAPACITY (MBH)	AIR SIDE ENT. AIR TEMP. (DEG. F)	AIR SIDE LVG. AIR TEMP. (DEG. F)	AIR SIDE MAX. FACE VEL. (FPM)	AIR SIDE AIR P.D. (In. WC)	WATER FLOW (GPM)	WATER ENT. WATER TEMP. (DEG. F)	WATER LVG. WATER TEMP. (DEG. F)	WATER P.D. (Ft. HD)	FLUID
AHU-01	MEZZANINE	VAV	4000	4000		6.05	PLENUM	1 & 16.5	6.1	2947	DIRECT	7.5	PACKAGED	196.99	123.8	83.00	70.00	54.81	54.66	527	8	1.29	STANDARD	117.13	51.00	78.00	501	0.16	5.87	140.00	100.00	0.45	WATER

AIR HANDLING UNIT SCHEDULE - DX /HOT WATER

PREFILTER				FINAL FILTER				UNIT ELECTRICAL CHARACTERISTICS					MANUFACTURER & MODEL No.	REMARKS
WIDTH	MERV RATING	INITIAL P.D. (In. WC)	FINAL P.D. (In. WC)	WIDTH	MERV RATING	INITIAL P.D. (In. WC)	FINAL P.D. (In. WC)	VOLTS	PHASE	FLA	MCA	MOP		
2"	8	---	0.668	2"	13	---	0.841	480	3	9.8	12.25	20	TRANE CSAA008	

BOILER SCHEDULE - HOT WATER - CONDENSING - NATURAL GAS

UNIT NO.	LOCATION	SERVICE	TYPE	BOILER HP	MINIMUM INPUT MBH	MINIMUM OUTPUT MBH	MAXIMUM INPUT MBH	MAXIMUM OUTPUT MBH	GAS FIRING RATE (CFH)	MIN. GAS PRESSURE BEFORE REGULATOR (In. WC)	FLUID	ENT. WATER TEMP. (DEG. F)	LVG. WATER TEMP. (DEG. F)	FLOW RATE GPM (DESIGN/MIN.)	DESIGN P.D. (Ft. HD)	MAX WORKING PRESSURE (PSI)	RELIEF VALVE SETTING (PSI)	MIN. EFF. REQ. EFF %	ELEC. CHARACTERISTICS TEST PROC.	HP	VOLTS	HZ	PHASE	FLA	MANUFACTURER & MODEL NO.	REMARKS
B-1	PLBG/MECH/ELEC - 113	VAV HEATING LOOP	WATER TUBE		28.5	25.65	285	264		4.0	WATER	100	140	10		80	30	95	AFUE		120	60	1	1.8	LOCHINVAR KNIGHT WHB285N	

VAV - SINGLE DUCT - AIR TERMINAL UNIT SCHEDULE - HOT WATER REHEAT

UNIT NO.	SERVICE	MAX AIR FLOW (CFM)	MIN AIR FLOW (CFM)	MIN INLET PRESS AT MAX CFM (In. WC)	INLET SIZE (In.)	RAD N.C. AT 1" S.P.	DISCH N.C. AT 1" S.P.	REHEAT COIL CAPACITY (MBH)	AIR SIDE HEATING AIR FLOW (CFM)	AIR SIDE ENT. AIR TEMP. (DEG. F)	AIR SIDE LVG. AIR TEMP. (DEG. F)	AIR SIDE AIR P.D. (In. WC)	AIR SIDE MAX FACE VEL. (FPM)	WATER SIDE WATER FLOW (GPM)	WATER SIDE WATER P.D. (Ft. HD)	WATER SIDE ENT. WATER TEMP. (DEG. F)	WATER SIDE LVG. WATER TEMP. (DEG. F)	WATER SIDE ROWS DEEP	FLUID	UNIT SIZE	MANUFACTURER & MODEL NO.	REMARKS
VAV-100		950	315	0.75	9	15	19	11.6	315	55	89	0.04	29.4	0.59	0.13	140	100	2	WATER	12	NAILOR D30RW	
VAV-101		210	65	0.75	5	15	20	3	65	55	97.6	0.01	7.8	0.15	0.01	140	100	2	WATER	8	NAILOR D30RW	
VAV-102		690	520	0.75	9	15	16	22.7	520	55	95.2	0.13	38.4	1.14	0.26	140	100	3	WATER	12	NAILOR D30RW	
VAV-104		545	265	0.75	9	15	15	7.3	265	55	95.7	0.01	18.6	0.37	0.05	140	100	2	WATER	12	NAILOR D30RW	
VAV-107		340	170	0.75	6	15	16	8.4	170	55	100.8	0.04	14.4	0.43	0.03	140	100	3	WATER	8	NAILOR D30RW	
VAV-109		200	90	0.75	6	15	18	3.9	90	55	94.5	0.01	9.6	0.19	0.01	140	100	2	WATER	8	NAILOR D30RW	
VAV-110		450	300	0.75	8	15	15	12/5	300	55	93.3	0.1	21	0.63	0.07	140	100	3	WATER	8	NAILOR D30RW	
VAV-113		150	45	0.75	5	15	19	2.2	45	55	100.9	0.0	6	0.11	0.0	140	100	2	WATER	8	NAILOR D30RW	
VAV-114		450	135	0.75	6	15	21	7.1	135	55	103.8	0.03	12	0.36	0.2	140	100	3	WATER	8	NAILOR D30RW	

AIR COOLED CONDENSER SCHEDULE

UNIT NO.	LOCATION	SERVES	CAPACITY TONS	REFRIGERANT	AMBIENT AIR TEMP. (DEG. F)	COILS ROWS	COILS FIN SPACING (FIN/In.)	COILS TOTAL FACE AREA (Sq. Ft.)	FANS NO. OF FANS	FANS DIA. (In.)	FANS SPEED (RPM)	FANS TOTAL AIRFLOW (CFM)	FANS MOTOR HP	PERFORMANCE REQUIRED (MBH/HP)	PERFORMANCE TEST PROCEDURE	ELEC CHARACTERISTICS KW	VOLTS	PHASE	MCA	I MCF	MOP	MANUFACTURER & MODEL No.	REMARKS
ACCU-01	GRADE	AHU-01	15	R410	95	1	23	44.31	2	28	1100	---	1 (EACH)	12.4	AHRI 460	14.7	460	3	34	45	45	TRANE TTA18044DAA	

UNIT HEATER SCHEDULE - GAS

UNIT NO.	LOCATION	TYPE	AIR SIDE AIR FLOW (CFM)	AIR SIDE ENT. AIR TEMP. (DEG. F)	AIR SIDE LVG. AIR TEMP. (DEG. F)	GAS INPUT CAPACITY (MBH)	GAS OUTPUT CAPACITY (MBH)	GAS MIN. GAS PRESS BEFORE REGULATOR (In. WC)	EFFICIENCY MIN (%)	EFFICIENCY TEST PROCEDURE	FAN MOTOR RPM	FAN MOTOR HP	FAN MOTOR VOLTS	FAN MOTOR PHASE	MOUNTING HEIGHT (Ft.-In.)	THROW (Ft.)	MANUFACTURER & MODEL No.	REMARKS
UH-001	STORAGE - 001	SEALED COMBUSTION	505	70	114	30	24.6	6" - 7"	82		1550	1/15	208	1	10	25	MODINE HDS30	
UH-116	SHOP/STORAGE - 116	SEALED COMBUSTION	505	70	114	30	24.6	6" - 7"	82		1550	1/15	208	1	10	25	MODINE HDS30	
UH-119	SHOP - 119	SEALED COMBUSTION	505	70	114	30	24.6	6" - 7"	82		1550	1/15	208	1	10	25	MODINE HDS30	
UH-118A	VEHICLE STORAGE -118	SEALED COMBUSTION	505	70	114	30	24.6	6" - 7"	82		1550	1/15	208	1	10	25	MODINE HDS30	
UH-118B	VEHICLE STORAGE -118	SEALED COMBUSTION	505	70	114	30	24.6	6" - 7"	82		1550	1/15	208	1	10	25	MODINE HDS30	
UH-118C	VEHICLE STORAGE -118	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-118D	VEHICLE STORAGE -118	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-118E	VEHICLE STORAGE -118	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-118F	VEHICLE STORAGE -118	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-120A	VEHICLE MAINTENANCE - 120	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-120B	VEHICLE MAINTENANCE - 120	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-120C	VEHICLE MAINTENANCE - 120	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-122	PARTS STORAGE - 122	SEALED COMBUSTION	505	70	114	30	24.6	6" - 7"	82		1550	1/15	208	1	10	25	MODINE HDS30	
UH-126A	WASHBAY - 126	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	
UH-122B	WASHBAY - 126	SEALED COMBUSTION	2140	70	123	150	123	6" - 7"	82		1075	1/6	208	1	15	51	MODINE PTS150	

REMARKS:
1. UNIT HEATER IS PART OF ALTERNATE #3

PACKAGED ENERGY RECOVERY VENTILATION UNIT SCHEDULE - STATIC PLATE CORE HEAT EXCHANGER

UNIT NO.	LOCATION	SERVICE	MODE	SUPPLY FAN AIR FLOW (CFM)	SUPPLY FAN E.S.P. (In. WC)	EXHAUST FAN AIR FLOW (CFM)	EXHAUST FAN E.S.P. (In. WC)	ELECTRICAL CHARACTERISTICS VOLTS	PHASE	MCA	MOP	TOTAL EFF. (%)	PERFORMANCE CONDITIONS O.A. DB	O.A. WB	R.A. DB	R.A. WB	S.A. DB	S.A. WB	E.A. DB	E.A. WB	MANUFACTURER & MODEL No.	REMARKS
ERV-001	STORAGE - 001	STORAGE - 001	SUMMER	110	0.35	110	0.35	120	1	---	---	69									REVEWAIRE EV130	
			WINTER									54										
ERV-116	SHOP - 116	SHOP - 116	SUMMER	80	0.60	80	0.60	120	1	---	---	73									RENEWAIRE EV130	
			WINTER									59										
ERV-118	VEHICLE STORAGE - 118	VEHICLE STORAGE - 118	SUMMER	900	1.28	900	1.33	208	1	7.7	15	70.6	88.9	73.9	75.0	62.5	79.0	67.9	---	---	RENEWAIRE HE1.5JINH	
			WINTER									55.7	9.0	6.1	70.0	51.4	53.5	40.9	---	---		
ERV-119	SHOP/SERVICE - 119	SHOP/SERVICE - 119	SUMMER	110	0.35	110	0.35	120	1	---	---	69									RENEWAIRE EV130	
			WINTER									54										
ERV-120	VEHICLE MAINTENANCE - 120	VEHICLE MAINTENANCE - 120	SUMMER	250	1.21	250	1.18	208	1	4.9	15	65.0	89.9	73.9	75.0	62.5	78.2	66.8	---	---	RENEWAIRE EV450JIN	
			WINTER									76.9	9.0	6.1	75.0	51.4	57.1	43.3	---	---		
ERV-122	PARTS STORAGE - 122	PARTS STORAGE - 122	SUMMER	100	0.5	100	0.5	120	1	---	---	65.0									RENEWAIRE EV450JIN	
			WINTER									76.9										
ERV-126	WASHBAY - 126	WASHBAY- 126	SUMMER	100	0.5	100	0.5	120	1	---	---	69									RENEWAIRE EV130	
			WINTER									54										

REMARKS:
1. ERV IS PART OF ALTERNATE #3

FAN SCHEDULE

UNIT NO.	LOCATION	SERVICE	FAN CHARACTERISTICS TYPE	BLADE TYPE	CFM	S.P. (In. WC)	MAX. BHP	FAN RPM	MAX. TIP SPEED (FPM)	SONES	DRIVE	MOTOR CHARACTERISTICS RPM	HP	VOLTS	HZ	PHASE	STARTER	MANUFACTURER & MODEL NO.	REMARKS
DSF-118A	VEHICLE STORAGE - 118	VEHILCE STORAGE -118	HVLS	PROP	670	---	---	1590	---	40.8 (Dba)	DIRECT	1590	1/4	277	60	1	MANUAL	ZOO FAN H30-AC	
DSF-118B	VEHICLE STORAGE - 118	VEHICLE STORAGE - 118	HVLS	PROP	670	---	---	1590	---	40.8 (Dba)	DIRECT	1590	1/4	277	60	1	MANUAL	ZOO FAN H30-AC	
DSF-118C	VEHICLE STORAGE - 118	VEHICLE STORAGE - 118	HVLS	PROP	670	---	---	1590	---	40.8 (Dba)	DIRECT	1590	1/4	277	60	1	MANUAL	ZOO FAN H30-AC	
DSF-120A	VEHICLE MAINTENANCE - 120	VEHICLE MAINTENANCE - 120	HVLS	PROP	670	---	---	1590	---	40.8 (Dba)	DIRECT	1590	1/4	277	60	1	MANUAL	ZOO FAN H30-AC	
DSF-120B	VEHICLE MAINTENANCE - 120	VEHICLE MAINTENANCE - 120	HVLS	PROP	670	---	---	1590	---	40.8 (Dba)	DIRECT	1590	1/4	277	60	1	MANUAL	ZOO FAN H30-AC	
DSF-126	WASHBAY - 126	WASHBAY - 126	HVLS	PROP	670	---	---	1590	---	40.8 (Dba)	DIRECT	1590	1/4	277	60	1	MANUAL	ZOO FAN H30-AC	
EF-103	TLT. RM - 103	TLT. RM - 103	INLINE	BI	100	0.26	---	950	---	0.6	DIRECT	---	17 (W)	120	60	1	MANUAL	GREENHECK SP-A110	
EF-111	MENS LOCKER - 111	RM 110 & RM 111	INLINE	BI	450	0.68	0.13	1725	4911	9.2	DIRECT	1725	1/6	208	60	1	MANUAL	GREENHECK SQ-95-VG	
EF-117	ELECTRICAL RM. - 117	ELECTRICAL RM. - 117	INLINE	BI	100	0.26	---	950	---	0.6	DIRECT	---	17 (W)	120	60	1	MANUAL	GREENHECK SP-A110	
EF-118A	VEHICLE STORAGE - 118	VEHICLE STORAGE - 118	INLINE	BI	7000	1.0	2.28	1688	9831	25	DIRECT	1800	5	208	60	3	COMBO	GREENHECK SQ-18-07-0700-VG	
EF-118B	VEHICLE STORAGE - 118	VEHICLE STORAGE - 118	INLINE	BI	7000	1.0	2.28	1688	9831	25	DIRECT	1800	5	208	60	3	COMBO	GREENHECK SQ-18-07-0700-VG	
EF-120	VEHICLE MAINTENANCE - 120	VEHICLE MAINTENANCE - 120	INLINE	BI	3500	0.75	1.05	1428	6263	17.1	DIRECT	1725	2	208	60	3	COMBO	GREENHECK SQ-160-VG	
EF-123	TLT. RM - 123	TLT. RM - 123	INLINE	BI	100	0.256	---	950	---	0.6	DIRECT	---	17 (W)	120	60	1	MANUAL	GREENHECK SP-A110	
EF-124	FLUIDS - 124	FLUID - 124	INLINE	BI	175	0.75	0.15	1693	4958	13.2	DIRECT	1725	1/4	208	60	1	MANUAL	GREENHECK SQ-97-VG	
EF-126	WASHBAY - 126	WASHBAY - 126	INLINE	BI	1200	0.17	0.3	1481	5088	9.3	DIRECT	1725	1/2	208	60	3	COMBO	GREENHECK SQ-120-VG	
EF-200	COMPRESSOR - 200	COMPRESSOR - 200	PROP	PROP	150	0.25	0.03	888	4676	7.4	DIRECT	1450	1/4	120	60	1	MANUAL	GREENHECK AER-E20C-600-VG	

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK · MICHAEL K. SUSSMAN · 077887-1 · LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

W&S Project No: N2190088

Drawing Title:

SCHEDULES

Sheet Number:

M700

DUCTLESS SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

UNIT NO.		LOCATION		INDOOR UNIT						EAT (DEG. F)					OUTDOOR UNIT					EAT (DEG. F)			EFFICIENCY		MANUFACTURER & MODEL No.		REMARKS
INDOOR	OUTDOOR	INDOOR	OUTDOOR	UNIT TYPE	CFM	O.A. CFM	EXT S.P. (In. WC)	COOLING CAPACITY (MBH)	MINIMUM CAPACITY (MBH)	DB	WB	VOLTS	PHASE	SOUND PRESSURE (dBA)	REFRIGERANT	VOLTS	PHASE	MCA	BREAKER SIZE (AMPS)	DB	WB	SOUND PRESSURE (dBA)	MINMUM (SEER)	TEST PROCEDURE	INDOOR UNIT	OUTDOOR UNIT	
MS-107	ACCU-107	IT/STORAGE - 107	GRADE	WALL MOUNTED	537	0.0	0.0	24.2	6.0	80.0	67.0	208	1	46	R-410A	208	1	19.6	30	95.0	75.0	50	14	AHRI 210/240	LG ARNU243SKA	LG ARNU024GSS4	1,2

REMARKS:
1. CONDENSATE PUMP.
2. BMS INTERFACE.

VRF SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE - INDOOR

UNIT NO.	SERVICE	UNIT TYPE	AIR FLOW (CFM)	MAX. EXT S.P. (In. W.C.)	COOLING CHARACTERISTICS			HEATING...		SOUND PRESSURE (dBA)	ELECTRICAL CHARACTERISTICS				EFFICIENCY		MANUFACTURER & MODEL No.	REMARKS
					NOMINAL CAPACITY (MBH)	CORRECTED CAPACITY SENS (MBH)	CORRECTED CAPACITY TOTAL (MBH)	MAX CAPACITY (MBH)	RATED CAPACITY (MBH)		VOLTS	PHASE	MCA	MFS	MINMUM (SEER)	TEST PROCEDURE		
FCU-121	MAINTENANCE OFFICE - 121	DUCTED	500	.5	12.0	1.6	13.6	19.4	16.0	35	POWERED FROM OUTDOOR UNIT				21.3		FUJITSU ARU12RGLX	1,2,3

REMARKS:
1. CONDENSATE PUMP.
2. FCU SYSTEM BASED OF FUJITSU SYSTEM MODEL 12RGLXD.
3. SPECIFIED COOLING, HEATING, AIR FLOW AND SOUND CHARACTERISTICS ARE BASED UPON HIGH FAN SPEED.

VRF SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE - OUTDOOR - AIR COOLED

UNIT NO.	LOCATION	SERVICE	COOLING CHARACTERISTICS			HEATING CHARACTERISTICS			SOUND PRESSURE (dBA)	REFRIGERANT	ELECTRICAL CHARACTERISTICS				NO. OF MODULES	MANUFACTURER & MODEL No.	REMARKS
			NOMINAL CAPACITY (MBH)	O.A. TEMP (DEG. F)	CORRECTED CAPACITY (MBH)	NOMINAL CAPACITY (MBH)	O.A. TEMP. (DEG. F)	CORRECTED CAPACITY (MBH)			VOLTS	PHASE	MCA	MOP			
ACCU-121	GRADE	FCU-121	13.6	-5	12	19.4	-5	16	49	R410A	208	1	13.4	15	1	FUJITSU ARU12RGLX	1,2

REMARKS:
1. FCU SYSTEM BASED OF FUJITSU SYSTEM MODEL 12RGLXD.
2. OUTDOOR UNIT PROVIDES POWER TO THE INDOOR UNIT.

UNIT HEATER SCHEDULE - ELECTRIC

UNIT NO.	LOCATION	TYPE	CAPACITY (MBH)	AIR SIDE					ELEC CHARACTERISTICS					MAX. EFFECTIVE MOUNTING HEIGHT	THROW (FT.)	MANUFACTURER & MODEL No.	REMARKS
				AIR FLOW (CFM)	ENT. AIR TEMP. (DEG. F)	LVG. AIR TEMP. (DEG. F)	FAN SPEED (RPM)	MOTOR HP	CAPACITY (KW)	NO. OF STEPS	VOLTS	PHASE	AMP				
EUH-1	WATER SERVICE ROOM	VERTICAL	10.2	350	40	67	1600	1/100	3.0	1	208	1	14.5	9'-0"	12	Q-MARK MUH03-81	1,2
EUH-2	COMPRESSOR ROOM	VERTICAL	10.2	350	40	67	1600	1/100	3.0	1	208	1	14.5	9'-0"	12	Q-MARK MUH03-81	1,2

REMARKS:
1. FURNISH WITH SINGLE POLE INTERNAL LINE-VOLTAGE THERMOSTAT CONTROLS, FAN DELAY, INDIVIDUALLY ADJUSTABLE DISCHARGE LOUVERS, UL, NEC, AND OSHA APPROVED.
2. FURNISH WILL WALL MOUNTING BRACKETS.

LOUVER SCHEDULE

UNIT NO.	LOCATION	SERVICE	TYPE	MATERIAL	FINISH	FREE AREA (Sq. Ft.)	DIMENSIONS (APPROX.)			AIR PERFORMANCE			MANUFACTURER & MODEL NO.	REMARKS
							WIDTH (In.)	HEIGHT (In.)	DEPTH (In.)	AIR FLOW (CFM)	VEL (FPM)	MAX P.D. (In. WC)		
LV-A	VEHICLE STORAGE - 118	INTAKE/EXHAUST	DRAINABLE	ALUMINUM	ANONDIZED	17.02	102	48	4	7000	411	0.03	GREENHECK ESD-403	1,2
LV-B	VEHICLE MAINTENANCE-120	INTAKE/EXHAUST	DRAINABLE	ALUMINUM	ANONDIZED	8.8	54	48	4	3500	397	0.03	GREENHECK ESD-403	1,2
LV-C	WASHBAY-126	INTAKE/EXHAUST	DRAINABLE	ALUMINUM	ANONDIZED	3.29	42	24	4	1200	364	0.03	GREENHECK ESD-403	1,2
LV-D	BOYS LOCKER -111	EXHAUST	DRAINABLE	ALUMINUM	ANONDIZED	1.16	24	18	4	450	387	0.03	GREENHECK ESD-403	1,2

REMARKS:
1. BIRD SCREEN.
2. INSECT SCREEN.

WALL HEATER SCHEDULE - ELECTRIC

UNIT NO.	LOCATION	TYPE	AIR FLOW (CFM)	CAPACITY (MBH)	ELEC CHARACTERISTICS				MANUFACTURER & MODEL No.	REMARKS
					CAPACITY (KW)	VOLTS	AMPS	PHASE		
EWH-01	VESTIBULE - 100	RECESSED	100	6.8	2.0	208	9.6	1	QMARK AWH4408F	1

REMARKS:
1. PROVIDE UNIT WITH FACTORY CONCEALED TAMPER RESISTANT THERMOSTAT. COORDINATE TEMPERATRUE SETTING WITH OWNER.

REGISTER GRILLE AND DIFFUSER SCHEDULE

TYPE	APPLICATION	MATERIAL	FINISH	MANUFACTURER & MODEL NO.	REMARKS
1	SUPPLY	STEEL	WHITE	TITUS MODEL OMNI	
2	SUPPLY	ALUMINUM	ANODIZED	TITUS DL	
A	RETURN	STEEL	WHITE	TITUS MODEL 350-RL	
B	EXHAUST	ALUMINUM	WHITE	TITUS MODEL 350-FL	

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson
WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants

RHINEBECK ARCHITECTURE

Seal:

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

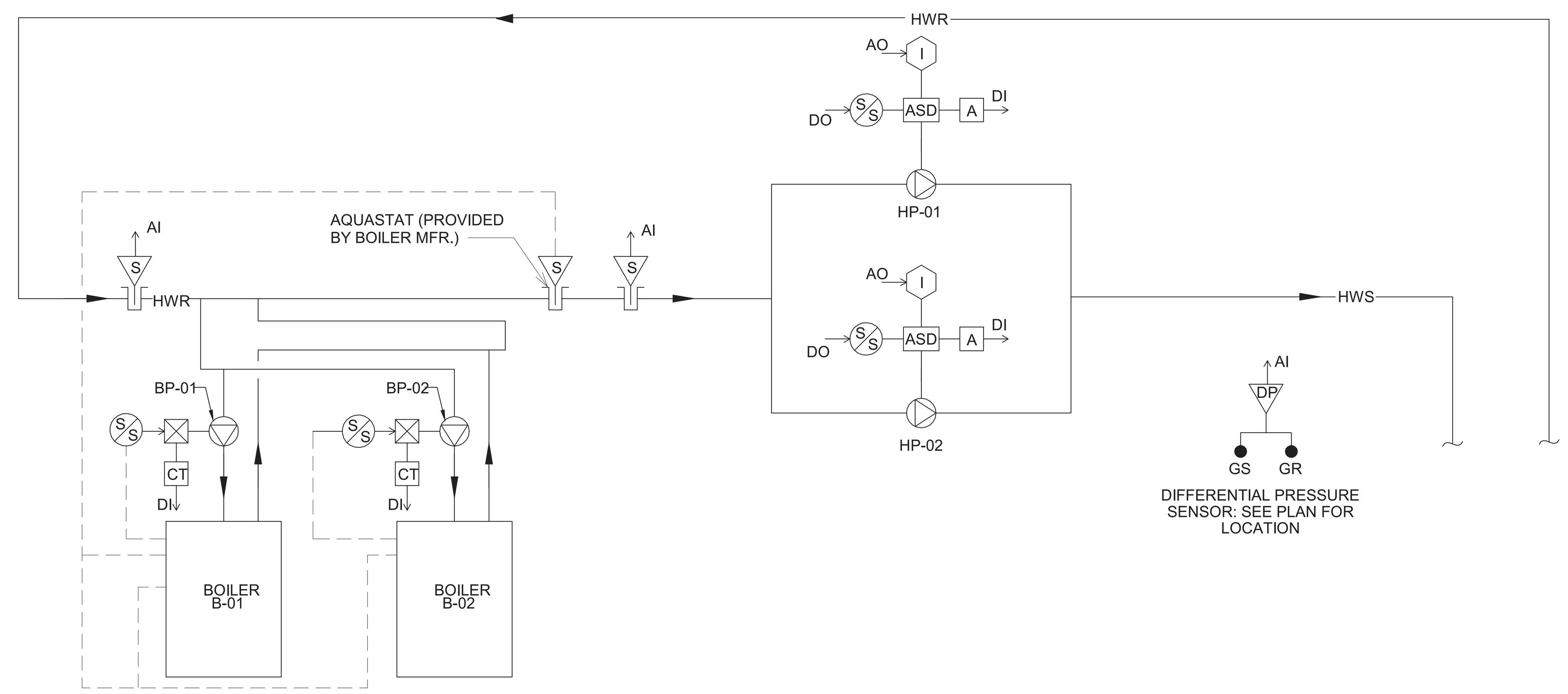
W&S Project No: N2190088

Drawing Title:

SCHEDULES

Sheet Number:

M701



SYSTEM SUMMARY	INPUT		OUTPUT			
	ANALOG	DIGITAL	ANALOG	DIGITAL	ALARM	TREND
HOT WATER RETURN TEMPERATURE	X					
DIFFERENTIAL PRESSURE SENSOR	X				X	
PUMP BP-01 STATUS		X			X	
PUMP BP-02 STATUS		X			X	
PUMP HP-01 STATUS		X			X	
PUMP HP-02 STATUS		X			X	
PUMP HP-01 INTERFACE			X			
PUMP HP-02 INTERFACE			X			
PUMP BP-01 START/STOP				X		
PUMP BP-02 START/STOP				X		
PUMP HP-01 START/STOP				X		
PUMP HP-02 START/STOP				X		
PUMP HP-01 CURRENT TRANSDUCER				X	X	
PUMP HP-02 CURRENET TRANSDUCER				X	X	

HOT WATER HEATING SYSTEM CONTROLS SEQUENCE:

A. RUN CONDITIONS: THE HEATING SYSTEM SHALL RUN CONTINUOUSLY. TO PREVENT SHORT CYCLING, EACH BOILER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUT DOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS

B. EACH BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS. BOILER CIRCULATOR PUMP (BP-01 & BP-02) SHALL BE INTERLOCKED WITH BOILER OPERATION AND SHALL BE OFF ONLY WHEN BOILER IS IN STANDBY MODE

C. BOILER B-01 SAFETIES: THE FOLLOWING SAFETIES SHALL BE MONITORED
   1. BOILER ALARM
   2. LOW WATER LEVEL

D. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. BOILER ALARM
   2. LOW WATER LEVEL ALARM

E. BOILER B-02 SAFETIES: THE FOLLOWING SAFETIES SHALL BE MONITORED
   1. BOILER ALARM
   2. LOW WATER LEVEL

F. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. BOILER ALARM
   2. LOW WATER LEVEL ALARM

G. THE BOILERS SHALL BE INDEXED ON YEAR ROUND AND SHALL BE CONTROLLED BY THEIR ON-BOARD CONTROLS. WHEN A BOILER IS INDEXED TO START, ITS ASSOCIATED BOOSTER PUMP SHALL BE STARTED AND FLOW SHALL BE CHECKED AS SENSE BY ITS ASSOCIATED FLOW SWITCH. ONCE FLOW IS SENSED THE BOILER SHALL BE ALLOWED TO START. THE BOILERS SHALL HAVE THE ABILITY TO COMMUNICATE AT A MINIMUM THE FOLLOWING POINTS:
   1. BOILERS RUN CONDITION (ON/OFF) FOR EACH BOILER
   2. BOILER PUMP COMMAND OUTPUT FOR EACH BOILER
   3. EACH BOILER'S SUPPLY HEADER TEMPERATURE

H. A MANUAL EMERGENCY SHUTDOWN SWITCH AT THE EXIT OF THE MECHANICAL ROOM SHALL SHUT DOWN THE BOILERS COMPLETELY. THE BAS SYSTEM SHALL INCORPORATE A CONTACT FROM THESE SWITCHES TO PROVIDE AN ALARM AT THE FRONT END COMPUTER IN THE EVENT OF A MANUAL SHUT DOWN OCCURRING

I. THE FOLLOWING SETPOINTS ARE RECOMMENDED VALUES. ALL SETPOINTS SHALL BE FIELD ADJUSTED DURING THE COMMISSIONING PERIOD TO MEET THE REQUIREMENTS OF ACTUAL FIELD CONDITIONS

J. BOILER LEAD/LAG/STANDBY OPERATION: THE TWO BOILERS SHALL OPERATE IN A LEAD/LAG FASHION
   1. THE LEAD BOILER SHALL RUN FIRST
   2. ON FAILURE OF THE LEAD BOILER, THE LAG BOILER SHALL RUN AND THE LEAD BOILER SHALL TURN OFF
   3. THE LEAD BOILER SHALL MODULATE TO MAINTAIN HOT WATER SUPPLY TEMPERATURE OF 130°F (ADJ.)
   4. IF LEAD BOILER REACHES FULL FIRE AND CANNOT MAINTAIN HOT WATER SUPPLY TEMPERATURE, LEAD BOILER SHALL BE ENABLED AND THE TWO BOILERS SHALL MODULATE IN UNISON TO MAINTAIN HOT WATER SUPPLY TEMPERATURE
   5. AS HOT WATER TEMPERATURE RISES BACK TO 20°F ABOVE SETPOINT, THE LAG BOILER SHALL STAGE OFF
   6. IF EITHER BOILER FAILS, THE STANDBY BOILER SHALL BE PROMOTED TO LAG BOILER AND RUN AS DESCRIBED ABOVE

K. THE DESIGNATED LEAD BOILER SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):
   1. MANUALLY THROUGH A SOFTWARE SWITCH
   2. IF BOILER RUNTIME (ADJ.) IS EXCEEDED
   3. DAILY
   4. WEEKLY
   5. MONTHLY

L. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. BOILER B-01
      a. FAILURE: COMMANDED ON, BUT THE STATUS IS OFF
      b. RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON
      c. RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT
   2. BOILER B-02
      a. FAILURE: COMMANDED ON, BUT THE STATUS IS OFF
      b. RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON
      c. RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT
   3. LEAD BOILER FAILURE: THE LEAD BOILER IS IN FAILURE AND THE STANDBY BOILER IS ON

M. HOT WATER SUPPLY TEMPERATURE SETPOINT RESET: THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET BASED ON OUTSIDE AIR TEMPERATURE
   1. AS OUTSIDE AIR TEMPERATURE RISES FROM 0°F (ADJ.) TO 70°F (ADJ.) THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL RESET DOWNWARDS BY SUBTRACTING FROM 0°F (ADJ.) TO 20°F (ADJ.) FROM THE CURRENT BOILER SETPOINT

N. PRIMARY HOT WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED
   1. PRIMARY HOT WATER SUPPLY
   2. PRIMARY HOT WATER RETURN

O. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. HIGH PRIMARY HOT WATER SUPPLY TEMP: IF GREATER THAN 140°F (ADJ.)
   2. LOW PRIMARY HOT WATER SUPPLY TEMP: IF LESS THAN 80°F (ADJ.)

P. BOILER B-01 HOT WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED
   1. BOILER B-01 HOT WATER SUPPLY
   2. BOILER B-01 HOT WATER RETURN

Q. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 140°F (ADJ.)
   2. LOW HOT WATER SUPPLY TEMP: IF LESS THAN 80°F (ADJ.)

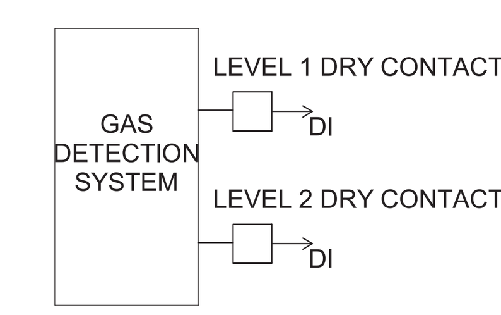
R. BOILER B-02 HOT WATER TEMPERATURE MONITORING: THE FOLLOWING TEMPERATURES SHALL BE MONITORED
   1. BOILER B-02 HOT WATER SUPPLY
   2. BOILER B-02 HOT WATER RETURN

S. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 140°F (ADJ.)
   2. LOW HOT WATER SUPPLY TEMP: IF LESS THAN 80°F (ADJ.)

T. SECONDARY HYDRONIC SYSTEM VARIABLE PUMP CONTROL SEQUENCE:
   1. HOT WATER PUMPS HP-01 & HP-02
      a. THE BAS SHALL START THE PUMP AND IT SHALL RUN CONTINUOUSLY
      b. THE BAS SHALL ALTERNATE PUMP OPERATION TO EQUALIZE RUN TIME
      c. THE BAS SHALL MODULATE THE LEAD AND LAG PUMP SPEED TO MAINTAIN A WATER DIFFERENTIAL SETPOINT OF 15 PSI (ADJ.). THE ASD'S MINIMUM SPEED SHALL NOT DROP BELOW 30% (ADJ.)
      d. THE BAS SHALL STOP THE PUMP WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 65°F (ADJ.)

U. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. DIFFERENTIAL PRESSURE: +/- 5PSI FROM SETPOINT
   2. SUPPLY WATER TEMPERATURE: +/- 10°F FROM SETPOINT
   3. PUMP HP-01 FAULT
   4. PUMP HP-02 FAULT

1 BOILER SYSTEM CONTROLS SEQUENCE
NTS



SYSTEM SUMMARY	INPUT		OUTPUT			
	ANALOG	DIGITAL	ANALOG	DIGITAL	ALARM	TREND
DRY CONTACT 1		X			X	
DRY CONTACT 2		X			X	

CARBON MONOXIDE ALARM SYSTEM CONTROL SEQUENCE:

A. GENERAL: UNIT SHALL MONITORED THE HONEYWELL E3 POINT GAS DETECTION SYSTEM AND ALARM WHEN UNIT INTERNAL THRESHOLDS ARE REACHED.

B. ALARM 1: THE CONTROLLER SHALL MONITOR THE DRY CONTACT AND ALARM WHEN LEVEL IS REACHED (25 PPM CO).

C. ALARM 2: THE CONTROLLER SHALL MONITOR THE DRY CONTACT AND ONCE ALARM REACHED H&V UNIT SHALL BE SET TO FULL OA PER SEQUENCE AND ALARM (200 PPM CO).

D. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. CO LEVEL 1: IF THE UNITS DRY CONTACT 1 IS CLOSED. CO DETECTED LOW.
   2. CO LEVEL 2: IF THE UNITS DRY CONTACT 2 IS CLOSED. CO DETECTED HIGH.

2 CARBON MONOXIDE ALARM CONTROL SEQUENCE
NTS

SYSTEM SUMMARY	INPUT		OUTPUT			
	ANALOG	DIGITAL	ANALOG	DIGITAL	ALARM	TREND
ZONE TEMPERATURE		X			X	
UNIT ENABLED/DISABLED			X			

DUCTLESS SPLIT SYSYTEM CONTROL SEQUENCE:

A. GENERAL: UNIT SHALL BE ENABLED/DISABLED AND TEMPERATURE MONITORED BY THE BUILDING MANAGEMENT CONTROL SYSTEM (BCS), AND CONTROLLED BY FACTORY PACKAGED CONTROLS TO MAINTAIN SPACE TEMPERATURE SETPOINT COOLING: 75°F (ADJ.) AND HEATING: 70°F (ADJ.)

B. ZONE TEMP: THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE

C. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   1. HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN 80°F (ADJ.)
   2. LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN 65°F (ADJ.)

3 DUCTLESS SPLIT SYSYTEM CONTROL SEQUENCE
NTS

Project:
VILLAGE OF ARDSLEY, NY
NEW PUBLIC WORKS FACILITY
220 HEATHERDELL ROAD, VILLAGE OF ARDSLEY, NEW YORK 10502

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

Mechanical/Electrical Engineering Consultants

Seal:

Revisions:

Rev	Date	Description

Issued For: BID

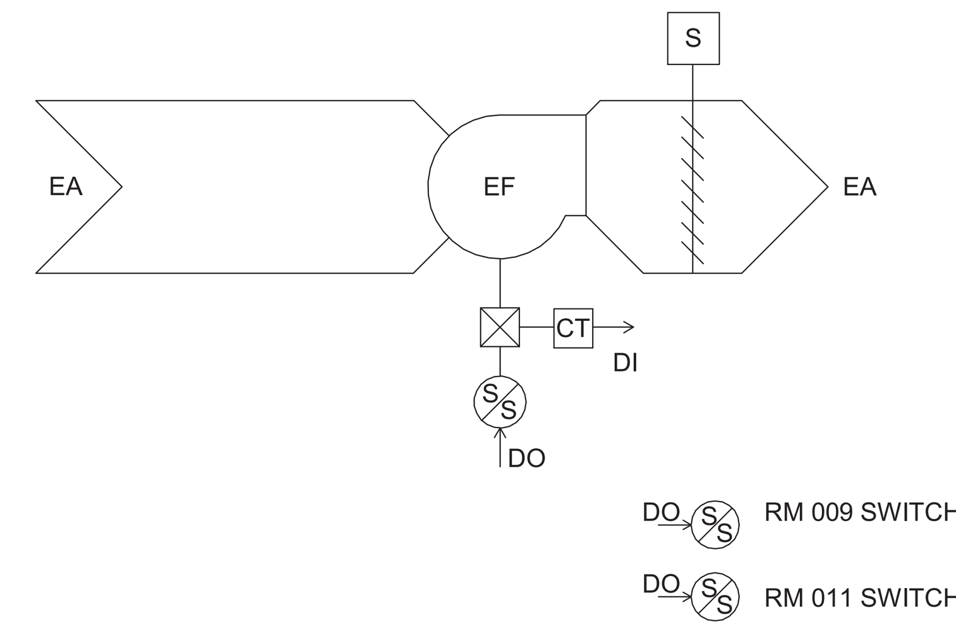
PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022
Drawn By: JDH
Reviewed By: TES
Approved By: BAB
W&S Project No: N2190088

Drawing Title:
CONTROLS

Sheet Number:
M800



EXHAUST FAN MEF-1 CONTROLS SEQUENCE:

A. RUN CONDITIONS - USER ENABLED: THE FAN SHALL RUN WHENEVER EITHER SWITCH IS ENABLED.

B. EXHAUST AIR DAMPER:

1. THE DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS

2. THE DAMPER SHALL CLOSE 30 SEC. (ADJ.) AFTER THE FAN STOPS

C. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED

2. DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN

D. FAN STATUS: THE CONTROLLER SHALL MONITOR THE FAN STATUS. CONTROLLER SHALL REPORT STATUS TO H&V UNIT CONTROL SEQUENCE FOR MODULATION OF OUTDOOR AIR DAMPER.

1. IN ROOM 009 SWITCH IS PRESSED DDC SHALL ALTER HV-2 SEQUENCE.

2. IN ROOM 011 SWITCH IS PRESSED DDC SHALL ALTER HV-1 SEQUENCE.

E. ALARMS SHALL BE PROVIDED AS FOLLOWS:

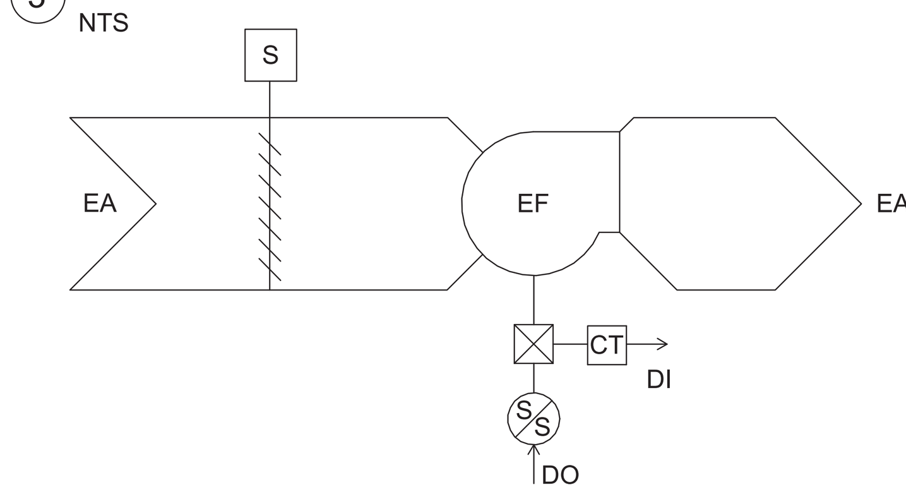
1. FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF

2. FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON

SYSTEM SUMMARY						
	INPUT		OUTPUT			
	ANALOG	DIGITAL	ANALOG	DIGITAL	ALARM	TREND
EXHAUST FAN STATUS		X			X	
EXHAUST FAN START/STOP				X	X	
EXHAUST DAMPER OPEN/CLOSE				X	X	
RM 009 SWITCH		X				X
RM 011 SWITCH		X				X

3 EXHAUST FAN EF-116 & EF-117 CONTROLS SEQUENCE

NTS



EXHAUST FAN CONTROLS SEQUENCE:

A. RUN CONDITIONS - CONTINUOUS: THE FAN SHALL RUN CONTINUOUSLY

B. FAN: THE FAN SHALL HAVE A USER DEFINABLE MINIMUM RUNTIME (ADJ.)

C. EXHAUST AIR DAMPER:

1. THE DAMPER SHALL OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS

2. THE DAMPER SHALL CLOSE 30 SEC. (ADJ.) AFTER THE FAN STOPS

D. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED

2. DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN

E. FAN STATUS: THE CONTROLLER SHALL MONITOR THE FAN STATUS

F. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF

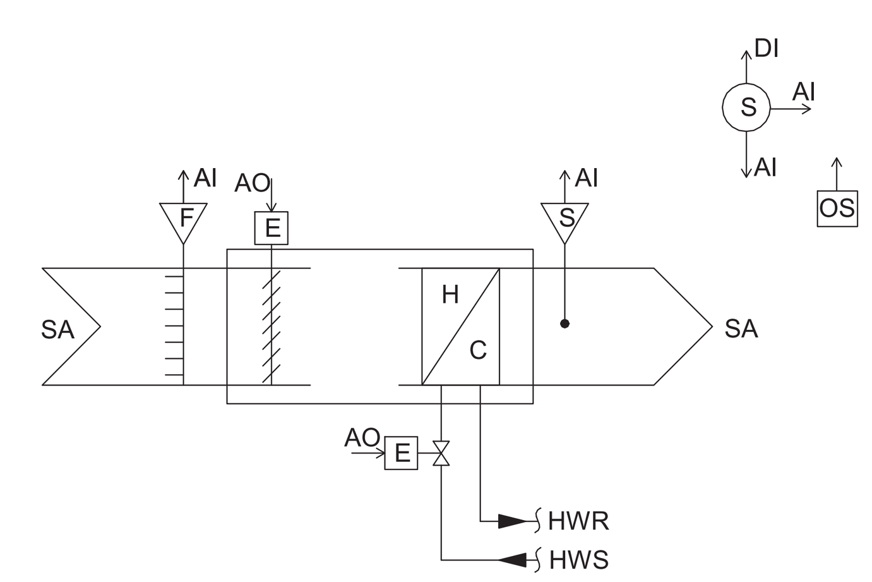
2. FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON

3. FAN RUNTIME EXCEEDED: FAN STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.)

SYSTEM SUMMARY						
	INPUT		OUTPUT			
	ANALOG	DIGITAL	ANALOG	DIGITAL	ALARM	TREND
FAN STATUS		X			X	
FAN START/STOP				X	X	

2 EXHAUST FAN CONTROLS SEQUENCE

NTS



CONTROL SEQUENCE FOR VAV TERMINAL UNIT:

A. RUN CONDITIONS:

1. OCCUPIED MODE: THE UNIT SHALL MAINTAIN A 74°F (ADJ.) COOLING SETPOINT AND A 70°F (ADJ.) HEATING SETPOINT

2. UNOCCUPIED MODE (NIGHT SETBACK): THE UNIT SHALL MAINTAIN AN 85°F (ADJ.) COOLING SETPOINT AND A 55°F (ADJ.) HEATING SETPOINT

B. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.)

2. LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.)

C. ZONE SETPOINT ADJUST: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR

D. ZONE UNOCCUPIED OVERRIDE: THE SPACE SENSOR SHALL BE FURNISHED WITH AN OCCUPIED/UNOCCUPIED OVERRIDE FEATURE. IF THE OVERRIDE IS ACTIVATED THE AIR HANDLING SYSTEM SHALL BE PLACED INTO OCCUPIED MODE FOR SPECIFIED TIME DURATION OF FOUR (4) HOURS (ADJ.)

E. REVERSING VARIABLE VOLUME TERMINAL UNIT - FLOW CONTROL:

1. OCCUPIED:

a. WHEN ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED

b. WHEN THE ZONE TEMPERATURE IS BETWEEN THE COOLING SETPOINT AND THE HEATING SETPOINT, THE ZONE DAMPER SHALL MAINTAIN THE MINIMUM REQUIRED ZONE VENTILATION (ADJ.)

c. WHEN ZONE TEMPERATURE IS LESS THAN ITS HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SETPOINT. ADDITIONALLY, IF WARM AIR IS AVAILABLE FROM THE RTU, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM OCCUPIED AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED

2. UNOCCUPIED:

a. WHEN THE ZONE IS UNOCCUPIED THE ZONE DAMPER SHALL CONTROL TO ITS MINIMUM UNOCCUPIED AIRFLOW (ADJ.)

b. WHEN THE ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED

c. WHEN ZONE TEMPERATURE IS LESS THAN ITS UNOCCUPIED HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT THE SETPOINT. ADDITIONALLY, IF WARM AIR IS AVAILABLE FROM THE RTU, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM HEATING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED

F. REHEATING COIL VALVE: THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE REHEATING COIL VALVE OPEN ON DROPPING TEMPERATURE TO MAINTAIN ITS HEATING SETPOINT

G. DISCHARGE AIR TEMPERATURE: THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE

H. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.)

2. LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.)

SYSTEM SUMMARY						
	INPUT		OUTPUT			
	ANALOG	DIGITAL	ANALOG	DIGITAL	ALARM	TREND
AIRFLOW	X				X	
SPACE TEMPERATURE	X				X	
DISCHARGE AIR TEMPERATURE	X				X	
ZONE SETPOINT ADJUST	X					
ZONE UNOCCUPIED OVERRIDE		X				
REHEAT VALVE			X			
ZONE DAMPER			X			

1 VAV CONTROL SEQUENCE

NTS

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD, VILLAGE OF ARDSLEY, NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SULLIVAN
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

W&S Project No: N2190088

Drawing Title:

CONTROLS

Sheet Number:

M801

AIR HANDLING UNIT CONTROLS SEQUENCE:

A. RUN CONDITIONS - CONTINUOUS: THE UNIT SHALL RUN CONTINUOUSLY

B. RETURN AIR SMOKE DETECTION: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A RETURN AIR SMOKE DETECTOR STATUS

C. FREEZE PROTECTION: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS

D. AHU OPTIMAL START: THE UNIT SHALL START PRIOR TO SCHEDULED OCCUPANCY BASED ON THE TIME NECESSARY FOR THE ZONES TO REACH THEIR OCCUPIED SETPOINTS. THE START TIME SHALL AUTOMATICALLY ADJUST BASED ON CHANGES IN OUTSIDE AIR TEMPERATURE AND ZONE TEMPERATURES

E. SUPPLY FAN: THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUT DOWN ON SAFETIES. TO PREVENT SHORT CYCLING, THE SUPPLY FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME

F. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF
2. SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON
3. SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.)

G. SUPPLY AIR AIRFLOW CONTROL: THE CONTROLLER SHALL MEASURE SUPPLY AIRFLOW AND SHALL MODULATE THE SUPPLY FAN VFD SPEED TO MAINTAIN THE SCHEDULED SUPPLY AIRFLOW (ADJ.) THE SUPPLY FAN VFD SPEED SHALL NOT DROP BELOW 30% (ADJ.)

H. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. HIGH SUPPLY AIRFLOW: IF THE SUPPLY AIRFLOW IS 25% (ADJ.) GREATER THAN SETPOINT
2. LOW SUPPLY AIRFLOW: IF THE SUPPLY AIRFLOW IS 25% (ADJ.) LESS THAN SETPOINT
3. SUPPLY FAN VFD FAULT

I. EXHAUST FAN: THE EXHAUST FAN SHAL RUN WHENEVER THE SUPPLY FAN RUNS

J. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. EXHAUST FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF
2. EXHAUST FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON
3. EXHAUST FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.)
4. EXHAUST FAN VFD FAULT

K. EXHAUST AIRFLOW: THE EXHAUST FAN VFD SHALL MODULATE TO MAINTAIN EXHAUST AIRFLOW SETPOINT. EXHAUST AIRFLOW SETPOINT SHALL BE 100% (ADJ.) OF THE OUTDOOR AIRFLOW MINUS AREA GENERAL EXHAUST (ADJ.). THE EXHAUST FAN VFD SPEED SHALL NOT DROP BELOW 12% (ADJ.)

L. ALARMS SHALL BE PROVIDED AS FOLLOWS:

1. HIGH EXHAUST AIRFLOW: IF THE EXHAUST AIRFLOW IS AN ADJUSTABLE PERCENTAGE GREATER THAN SETPOINT
2. LOW EXHAUST AIRFLOW: IF THE EXHAUST AIRFLOW IS AN ADJUSTABLE PERCENTAGE LESS THAN SETPOINT

M. SUPPLY AIR TEMPERATURE SETPOINT - OPTIMIZED: THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE AND SHALL MAINTAIN A SUPPLY AIR TEMPERATURE SETPOINT RESET BASED ON ZONE COOLING AND HEATING REQUIREMENTS

1. THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FOR COOLING BASED ON ZONE COOLING REQUIREMENTS AS FOLLWS:
   a. THE INITIAL SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 50°F (ADJ.)
   b. AS COOLING DEMAND INCREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF 48°F (ADJ.)
   c. AS COOLING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM OF 55°F (ADJ.)
2. IF MORE ZONES NEED HEATING THAN COOLING, THEN THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE RESET FOR HEATING AS FOLLOWS:
   a. THE INITIAL SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 72°F (ADJ.)
   b. AS HEATING DEMAND INCREASES, THE SETPOINT SHALL INCREMENTALY RESET UP TO A MAXIMUM OF 82°F (ADJ.)
   c. AS HEATING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF 62°F (ADJ.)

N. COOLING STAGES: THE CONTROLLER SHALL MODULATE THE DIGITAL STROLL COMPRESSOR TO MEET DISCHARGE AIR TEMPERATURE SETPOINT. THE COOLING SHALL BE ENABLED WHENEVER:

1. OUTSIDE AIR TEMPERATURE IS GREATER THAN 50°F (ADJ.)
2. THE ECONOMIZER IS DISABLED OR FULLY OPEN
3. THE SUPPLY FAN STATUS IS ON
4. THE HEATING IS NOT ACTIVE

O. ALARMS HSALL BE PROVIDEDC AS FOLLOWS:

1. HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS 5°F (ADJ.) GREATER THAN SETPOINT

P. HEATING STAGES: THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE HEATING TO MAINTAIN ITS HEATING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME. THE HEATING SHALL BE ENABLED WHENEVER:

1. OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.)
2. THE ZONE TEMPERATURE IS BELOW HEATING SETPOINT
3. THE SUPPLY FAN STATUS IS ON
4. THE COOLING IS NOT ACTIVE

Q. ECONOMIZER: THE CONTROLLER SHALL MEASURE THE MIXED AIR TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F (ADJ.) LESS THAN THE SUPPLY AIR TMEPERATRURE SETPOINT. THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION OF 30% (ADJ.) OPEN WHENEVER OCCUPIED. VERIFY VIA BALANCER THAT OPENING PERCENT PROVIDES SCHEDULED OUTDOOR AIR. ADJUST AS REQUIRED.

1. THE ECONOMIZER SHALL BE ENABLED WHENEVER:
   a. OUTSIDE AIR TEMPERATUER IS LESS THAN 65°F (ADJ.)
   b. THE OUTSIDE AIR ENTHALPY IS LESS THAN 22 BTU/LB (ADJ.)
   c. THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE
   d. THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY
   e. THE SUPPLY FAN STATUS IS ON
2. THE ECONOMIZER SHALL CLOSE WHENEVER:
   a. MIXED AIR TEMPERATUER DROPS FROM 40°F (ADJ.) TO 35°F (ADJ.)
   b. OR THE FREEZESTAT (IF PRESENT) IS ON\
   c. OR ON LOSS OF SUPPLY FAN STATUS
3. THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHAL OPEN WHEN THE UNIT IS OFF. IF OPTIMAL START-UP IS AVAILABLE THE MIXED AIR DAMPER SHALL OPERATE AS DESCRIBED IN THE OCCUPIED MODE EXCEPT THAT THE OUTSIDE AIR DAMPER SHALL MODULATE TO FULLY CLOSED

R. OUTSIDE AIR VENTILATION - FIXED PERCENTAGE: THE OUTSIDE AIR DAMPERS SHALL MAINTAIN A MINIMUM ADJUSTABLE POSITION DURING BUILDING OCCUPIED HOURS AND BE CLOSED DURING UNOCCUPIED HOURS

1. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   a. HIGH SUPPLY AIR HUMIDITY: IF THE AIR HUMIDITY IS GREATER THAN 90% RH (ADJ.)
   b. LOW SUPPLY AIR HUMIDITY: IF THE SUPPLY AIR HUMIDITY IS LESS THAN 30% RH (ADJ.)

S. PREFILTER DIFFERNTIAL PRESSURE MONITOR: THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER

1. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   a. PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.)

T. FINAL FILTER DIFFERENTIAL PRESSURE MONITOR: THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER

1. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   a. FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.)

U. MIXED AIR TEMEPERATURE: THE CONTROLLER SHALL MONITOR THE MIXED AIR TEMERATURE AND USE AS REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR PREHEATING CONTROL (IF PRESENT)

1. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   a. HIGH MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.)
   b. LOW MIXED AIR TEMP: IF THE MIXED AIR TEMPERATURE IS LESS THAN 45°F (ADJ.)

V. RETURN AIR HUMIDITY: THE CONTROLLER SHALL MONITOR THE RETURN AIR HUMIDITY AND USE A REQUIRED FOR ECONOMIZER CONTROL (IF PRESENT) OR HUMIDITY CONTROL (IF PRESENT)

1. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   a. HIGH RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS GREATER THAN 70% (ADJ.)
   b. LOW RETURN AIR HUMIDITY: IF THE RETURN AIR HUMIDITY IS LESS THAN 35% (ADJ.)

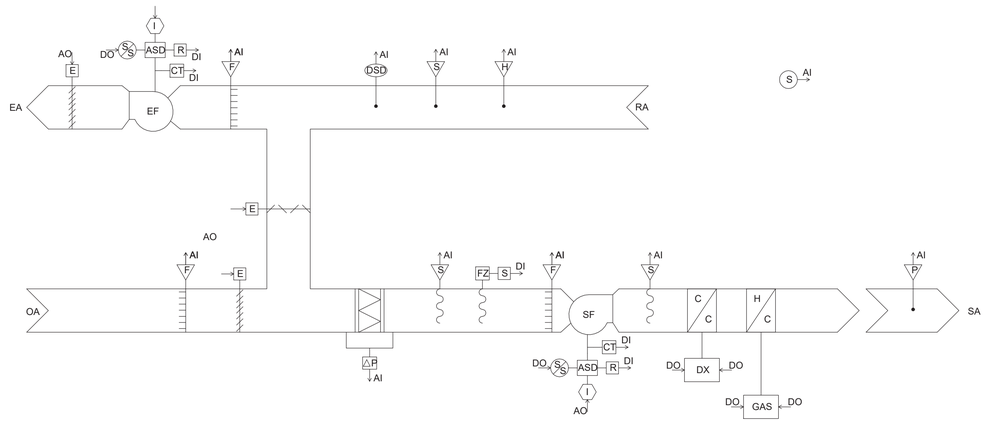
W. RETURN AIR TEMPERATURE: THE CONTROLLER SHALL MONITOR THE RETURN AIR TEMPERATURE AND USE AS REQUIRED FOR SETPOINT CONTROL OR ECONOMIZER CONTRL (IF PRESENT)

1. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   a. HIGH RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS GREATER THAN 90°F (ADJ.)
   b. LOW RETURN AIR TEMP: IF THE RETURN AIR TEMPERATURE IS LESS THAN 45°F (ADJ.)

X. SUPPLY AIR TEMPERATURE: THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE

1. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   a. HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERTURE IS GREATER THAN 120°F (ADJ.)
   b. LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.)

SYSTEM SUMMARY	INPUT		OUTPUT			
	ANALOG	DIGITAL	ANALOG	DIGITAL	ALARM	TREND
OUTDOOR AIRFLOW	X					
SUPPLY AIRFLOW	X				X	
EXHAUST AIRFLOW	X				X	
PREFILTER DIFFERENTIALPRESSURE	X					
FINAL FILTER DIFFERENTIAL PRESSURE	X					
MIXED AIR TEMPERATURE	X				X	
RETURN AIR TEMPERATURE	X				X	
RETURN AIR HUMIDITY	X					
SUPPLY AIR TEMPERATURE	X					
SPACE TEMPERATURE	X					
SUPPLY FAN STATUS		X			X	
SUPPLY FAN VFD FAULT		X			X	
EXHAUST FAN STATUS		X			X	
EXHAUST FAN VFD FAULT		X			X	
CONDENSING UNIT ALARM		X			X	
RETURN AIR SMOKE DETECTOR		X				
SUPPLY FAN ASD SPEED			X			
EXHAUST FAN ASD SPEED			X			
MIXED AIR DAMPERS			X			
CONDENSING UNIT MODULATION			X			
CONDENSING UNIT ENABLE/DISABLE				X		
COOLING STAGE 1				X		
COOLING STAGE 2				X		
HEATING STAGE 1				X		
HEATING STAGE 2				X		
SUPPLY FAN START/STOP				X		
EXHAUST FAN START/STOP				X		



1 AIR HANDLING UNIT CONTROLS SEQUENCE
NTS

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
VILLAGE OF ARDSLEY,
NEW YORK 10502

Weston & Sampson

WESTON & SAMPSON, PE, LS, LA, PC
1 Winners Circle Suite 130
Albany, NY 12205
(508) 698-3034 (800) SAMPSON
www.westonandsampson.com

Consultants:

CALGI CONSTRUCTION Established 1919
56 Lafayette Avenue, Suite 350
White Plains, NY 10603
(914) 682-9423
www.calgiconstruction.com

ME ENGINEERING
Mechanical/Electrical Engineering Consultants
Capital District | Rochester | Buffalo | Syracuse

RHINEBECK ARCHITECTURE

Seal:

STATE OF NEW YORK
MICHAEL K. SUNDAY
077887-1
LICENSED PROFESSIONAL ENGINEER

Revisions:

Rev	Date	Description

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: JDH

Reviewed By: TES

Approved By: BAB

W&S Project No: N2190088

Drawing Title:

CONTROLS

Sheet Number:

M802