

HVAC DRAWINGS FOR: LINCOLN EQUITIES BUILDING B SOUTHEAST, NY

SPECIFICATIONS:

SECTION 1 - HVAC CRITERIA

1.0 GENERAL

- A. THESE DOCUMENTS ARE INTENDED TO PROVIDE ALL DRAWINGS, NOTATIONS, DETAILS, AND SCHEDULES NECESSARY FOR THE INSTALLATION OF A COMPLETE HVAC SYSTEM. THESE DOCUMENTS ARE PREPARED TO EXCLUDE ALL WORK NOT SPECIFICALLY INCLUDED IN THE SET.
- B. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY LABOR AND MATERIALS FOR A COMPLETE SYSTEM TO MEET THE INTENT OF THE DESIGN AND AS INDICATED IN THE DESIGN DOCUMENTS. ANY ACCESSORIES OR MATERIALS OBVIOUSLY A PART OF THE SYSTEM AND INTEGRAL IN ITS OPERATION, ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN, SHALL BE FURNISHED AND INSTALLED AS IF CALLED FOR IN DETAIL.

- C. THIS CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING COMPLETE AND OPERATING SYSTEMS. THIS CONTRACTOR ACKNOWLEDGES AND UNDERSTANDS THAT THE CONTRACT DOCUMENTS ARE A TWO-DIMENSIONAL REPRESENTATION OF A THREE-DIMENSIONAL OBJECT. SUBJECT TO HUMAN INTERPRETATION, THIS REPRESENTATION MAY INCLUDE IMPERFECT DATA, INTERPRETED CODES, UTILITY GUIDELINES, THREE-DIMENSIONAL CONFLICTS, AND REQUIRED FIELD COORDINATION ITEMS. SUCH DEFICIENCIES CAN BE CORRECTED WHEN IDENTIFIED PRIOR TO ORDERING MATERIAL AND STARTING INSTALLATION. THIS CONTRACTOR AGREES TO CAREFULLY STUDY AND COMPARE THE INDIVIDUAL CONTRACT DOCUMENTS AND REPORT AT ONCE IN WRITING TO THE DESIGN TEAM ANY DEFICIENCIES THIS CONTRACTOR MAY DISCOVER. THIS CONTRACTOR FURTHER AGREES TO REQUIRE EACH SUBCONTRACTOR TO LIKEWISE STUDY THE DOCUMENTS AND REPORT AT ONCE ANY DEFICIENCIES DISCOVERED.

- D. ALL MATERIAL AND EQUIPMENT USED SHALL BE NEW AND FREE FROM DEFECTS.
- E. PROVIDE MECHANICAL SYSTEMS IDENTIFICATION TO INDICATE THE TAG, TYPE, FLOW, TEMPERATURE RANGE, CAPACITY, ETC OF EACH ITEM OF EQUIPMENT AND ALL CONVEYANCES (DUCTWORK AND PIPING SYSTEMS). ALL MAJOR EQUIPMENT SHALL BE PROVIDED WITH LAMINATED PLASTIC NAME PLATES IDENTIFYING THE EQUIPMENT WITH NOMENCLATURE CORRESPONDING TO THE MARKINGS ON THE DRAWINGS. LETTERING SHALL BE 1/2" HIGH. PROVIDE ADHESIVE BACKED PLASTICIZED MARKERS FOR DUCTWORK. PIPING IDENTIFICATION TO FOLLOW ASME 13 STANDARDS. LOCATE LABELINGS TO BE ABLE TO EASILY IDENTIFY PIPING SERVICE. PROVIDE ENGRAVED BRASS OR LAMINATED PLASTIC VALVE TAGS WITH STAINLESS STEEL BALL CHAIN FASTENER. PROVIDE VALVE TAG SCHEDULE WITH CLOSEOUT DOCUMENTS.

- F. THIS CONTRACTOR SHALL PERFORM WORK IN A SAFE MANNER. COMPLY WITH ALL APPLICABLE OSHA SAFETY GUIDELINES IN ACCORDANCE WITH 29 CFR 1926 OSHA CONSTRUCTION INDUSTRY REGULATIONS DURING THE COURSE OF COMPLETING THE WORK DESCRIBED IN THESE DOCUMENTS.

- G. THIS CONTRACTOR SHALL KEEP AND MAINTAIN ON SITE A COPY OF ALL SAFETY DATA SHEETS FOR ALL PRODUCTS AND MATERIALS ON SITE WHICH COMPLY WITH THE GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELING OF CHEMICALS. THIS INCLUDES:
 1. MAINTAINING A HAZARD COMMUNICATION PROGRAM DETAILING THE PLANS IN PLACE FOR THE SAFE HANDLING OF CHEMICALS
 2. MAINTAINING A WRITTEN CHEMICAL INVENTORY OF EVERY HAZARDOUS CHEMICAL IN THE FACILITY TO WHICH EMPLOYEES ARE EXPOSED
 3. MAINTAINING PROPER LABELS AND WARNING SIGNS ASSOCIATED WITH SAID CHEMICALS
 4. TRAINING EMPLOYEES ON CHEMICAL HAZARDS AND NECESSARY PRECAUTIONS

- H. NO CHEMICALS MAY BE STORED IN ANY CONTAINERS OTHER THAN THE ORIGINAL MANUFACTURER'S CONTAINERS.
 1. INSTALL ALL ITEMS PER THE MANUFACTURER'S INSTRUCTIONS AND PROVIDE PROPER ELECTRICAL AND MAINTENANCE CLEARANCES.

1.1 COORDINATION

- A. COORDINATE THE ROUTING OF ALL MECHANICAL SYSTEMS WITH THE OTHER TRADES TO AVOID CONFLICTS WITH DUCTS, PIPES, ETC. ITEMS REQUIRING PITCH MUST BE CONSIDERED FOR THEIR RIGHT-OF-WAY.
- B. GENERAL CONTRACTOR (G.C.) SHALL PROVIDE AND INSTALL ALL PRIMARY STRUCTURAL SUPPORT, UNIFORM LEVEL, FOR ALL FLOOR, CEILING, OR ROOF MOUNTED EQUIPMENT OR COMPONENTS AS DESIGNED BY ARCHITECT OR STRUCTURAL ENGINEER AND APPROVED BY THE JURISDICTION OF AUTHORITY.
- C. THIS CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES. ANY DISCREPANCIES SHALL BE RELATED TO NDBS FOR COMMENT AND CORRECTIVE ACTION AS NEEDED.

- D. ALL LINTELS, FRAMING, FURRING, PATCHING, AND PAINTING REQUIRED WILL BE PROVIDED BY THE G.C.
- E. ALL GAS PIPING EXPOSED TO WEATHER SHALL BE PAINTED BY THE G.C.

- F. THE G.C. SHALL PROVIDE ALL PADS AS REQUIRED FOR THE INSTALLATION OF THE HVAC EQUIPMENT. PADS SHALL BE PROVIDED IN ACCORDANCE WITH THE STRUCTURAL ENGINEER'S DESIGN FOR SITE CONDITIONS, WEIGHT, SEISMIC AND WIND CONSIDERATIONS. HEIGHT OF THE PAD SHALL (FOR GRAVITY DRAIN EQUIPMENT) SHALL BE FIELD ADJUSTED BY G.C. BASED ON APPROVED EQUIPMENT SUBMITTALS.

- G. E.C. SHALL MOUNT AND WIRECONNECT ALL 460 VOLT AND 120 VOLT COMPONENTS (RELAYS, FAN WIRING, HIGH LIMITS, SOLENOIDS, CONTROLLERS, ETC.) AND OTHER ELECTRICAL COMPONENTS FURNISHED BY THIS CONTRACTOR. THIS CONTRACTOR IS RESPONSIBLE FOR ALL 24 VOLT THERMOSTAT WIRING.

- H. EQUIPMENT IS NOT INTENDED FOR TEMPORARY CONDITIONING UNLESS COORDINATED WITH NDBS AHEAD OF TIME. SHOULD NDBS APPROVE OF TEMPORARY USE, RETURN AIR OPENINGS SHALL BE PROTECTED WITH FILTER MEDIA (MINIMUM MERV 8) WHILE EQUIPMENT IS OPERATED DURING CONSTRUCTION.

1.2 CONSTRUCTION

- A. ALL EQUIPMENT, PIPING SUPPORTS, AND DUCTWORK SUPPORTS SUSPENDED FROM ROOF JOISTS SHALL BE SUSPENDED FROM THE TOP CHORD OF THE JOIST UNLESS PRIOR APPROVAL FROM G.C. OR STRUCTURAL ENGINEER.
- B. PROVIDE DUCT, PIPING AND HANGER PENETRATIONS THROUGH NON-RATED ENCLOSURES WITH DRAFT STOPPING OR SMOKE BARRIER SEALANT SYSTEMS. INSTALL PENETRATION BACKUP SYSTEMS IN STRICT ACCORDANCE TO MANUFACTURER'S APPLICATION DETAILS AND INSTRUCTIONS. PROVIDE DRAFT STOPPING OR SMOKE BARRIER SEALANTS TO MEET APPROVAL OF AHJ.

- C. LOCATE AND PROVIDE SCHEDULE 40 STEEL SLEEVES AT ALL CONCRETE PENETRATIONS THROUGH WALLS AND FLOORS PRIOR TO CONCRETE BEING POURED. THIS SUBCONTRACTOR WILL BE RESPONSIBLE TO CORE DRILL ANY HOLE THAT IS NOT LOCATED PRIOR TO CONCRETE POURING, IN WHICH CASE A SLEEVE IS NOT REQUIRED. CORE DRILL HOLE OR SLEEVE SHALL PROVIDE MINIMUM 1" CLEARANCE AROUND ENTIRE CIRCUMFERENCE OF PIPE. CALCUL ANNUAL SPACE WATERTIGHT. PROVIDE A LINK SEAL THROUGH ALL PENETRATIONS LOCATED BELOW GRADE.

- D. PROTECT ALL EQUIPMENT, PIPING AND DUCTWORK OPENINGS DURING CONSTRUCTION WITH PLASTIC OR OTHER NON-POROUS MATERIAL TO LIMIT CONTAMINATION FROM DUST AND OTHER CONSTRUCTION DEBRIS. MATERIAL AND EQUIPMENT SHALL BE ELEVATED OFF FLOOR AND PROTECTED WHEN STORED ON SITE.

1.3 ACTION SUBMITTALS

A. PRODUCT DATA:

1. FOR ALL EQUIPMENT FURNISHED BY THIS CONTRACTOR
 - (1) SHOP DRAWINGS INCLUDING AT A MINIMUM: CAPACITIES, DIMENSIONS, WEIGHTS, ELECTRICAL REQUIREMENTS, FAN AND PUMP CURVES
2. METAL DUCTS
 - (1) LINERS AND ADHESIVES
 - (2) SEALANTS AND GASKETS
3. PIPING
 - (1) PIPING SPECIALTIES
 - (2) VALVES
 - (3) PRESSURE REGULATORS
 - (4) PIPING SPECIALTIES ITEMS

1.4 INFORMATIONAL SUBMITTALS

- A. BRAZING AND WELDING CERTIFICATES
- B. FIELD QUALITY-CONTROL REPORTS

SECTION 2 - FIELD QUALITY CONTROL

2.0 GENERAL

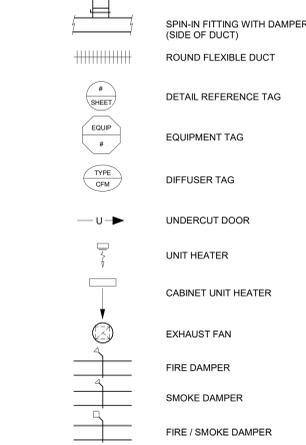
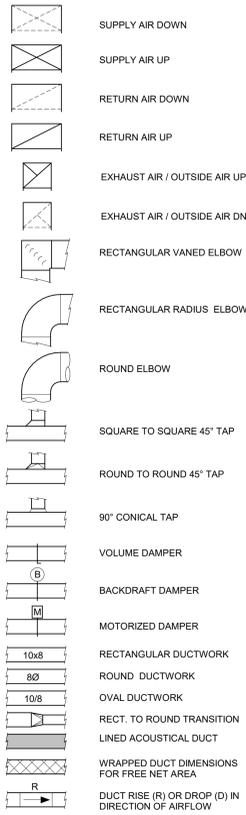
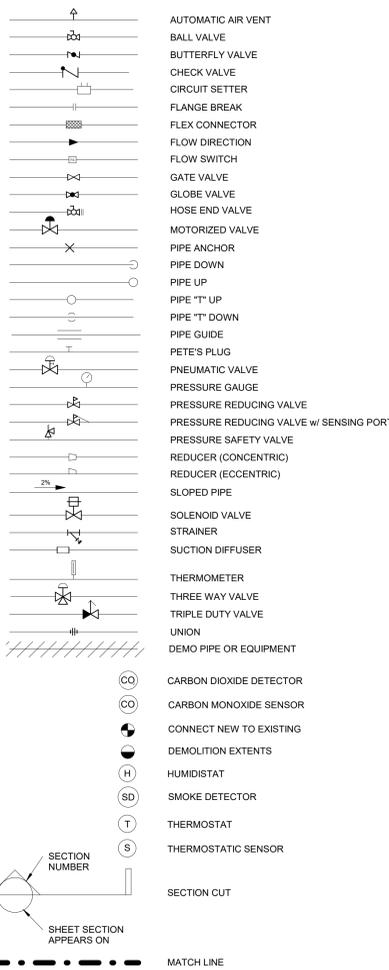
- A. REFER TO PIPE SCHEDULE FOR PIPE TESTING REQUIREMENTS.
- B. EQUIPMENT THAT IS NOT INTENDED TO BE SUBJECT TO THE TEST PRESSURE SHALL BE ISOLATED FROM THE PIPING. IF A VALVE IS USED TO ISOLATE THE EQUIPMENT, ITS CLOSURE SHALL BE CAPABLE OF SEALING AGAINST THE TEST PRESSURE WITHOUT DAMAGE TO THE VALVE. FLANGED JOINTS AT WHICH BLINDS ARE INSERTED TO ISOLATE EQUIPMENT NEED NOT BE TESTED.
- C. PIPE PRESSURE TEST REPORTS ARE REQUIRED AS PART OF THE PROJECT CLOSE OUT DOCUMENTS AND ARE TO INCLUDE WITNESS SIGNATURES. A WRITTEN FIELD PRESSURE TEST DECLARATION SHALL BE PREPARED DOCUMENTING THE FIELD TEST PROCEDURE AS REQUIRED BY APPLICABLE CODE AND PROVIDE TO NDBS AND THE BUILDING INSPECTOR PRIOR TO FINAL APPROVAL.
- D. DURING PRESSURE TESTING, VERIFY THAT STRESS DUE TO PRESSURE AT BOTTOM OF VERTICAL RISERS DOES NOT EXCEED 90% OF SPECIFIED MINIMUM YIELD STRENGTH OR 1.7 TIMES "SE" VALUE AS LISTED IN ASME B31.9.

SECTION 3 - EQUIPMENT TESTING AND START-UP

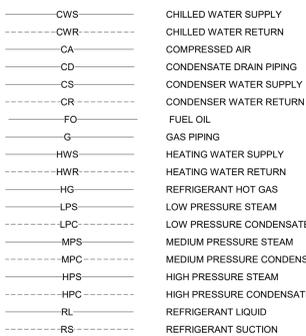
3.0 GENERAL

- A. PRIOR TO START-UP PROCEDURES, SUBMITTAL DOCUMENTATION SHALL BE VERIFIED FOR COMPLETENESS AND CORRECTNESS AS IT APPLIES TO ALL INSTALLED EQUIPMENT BASED ON THE CURRENT CONTRACT DOCUMENTS.
- B. SUBMITTALS SHALL BE COMPARED TO ALL INSTALLED EQUIPMENT AND VERIFICATION MADE THAT EACH DOCUMENT MATCHES THE FINAL INSTALLATION. THE FOLLOWING ITEMS SHALL BE SPECIFICALLY VERIFIED:
 1. TAGGING OF EQUIPMENT AND MODEL NUMBER IS CONSISTENT WITH DOCUMENTS, SUBMITTALS AND NAMEPLATE DATA.
 2. PHYSICAL DIMENSIONS COINCIDE WITH INSTALLATION INCLUDING SERVICE CLEARANCES.
 3. SHIPPED LOOSE ACCESSORIES ARE PROPERLY INSTALLED.
- C. THIS CONTRACTOR SHALL FILL OUT ALL MANUFACTURER START-UP SHEETS AS A CLOSE OUT DOCUMENT

SYMBOLS



PIPING LINE TYPES

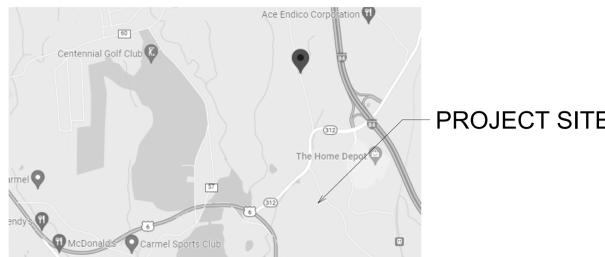


* NOTE: NOT ALL PIPING LINE TYPES, SYMBOLS, OR ABBREVIATIONS ARE UTILIZED ON EVERY PROJECT.

ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	H	HUMIDITY SENSOR
AC	AIR CURTAIN	HEV	HOSE END VALVE
ACC	AIR COOLED CONDENSER	HP	HORSEPOWER
ACH	AIR CHANGES PER HOUR	HVLS	HIGH VOLUME LOW SPEED
AFF	ABOVE FINISHED FLOOR	HWP	HOT WATER PUMP
AHJ	AUTHORITY HAVING JURISDICTION	HX	HEAT EXCHANGER
AHU	AIR HANDLING UNIT	HZ	HERTZ
AL	ALUMINUM	ID	INSIDE DIAMETER
AMP	AMPERE	IH	INTAKE HOOD
AP	ACCESS PANEL	IN W.C.	INCHES OF WATER COLUMN
APD	AIR PRESSURE DROP	IM	INSTALLATION AND OPERATION MANUAL
ARU	AIR ROTATION UNIT	KW	KILOWATT
AS	AIR SEPARATOR	L	LOUVER
ATR	ALL THREAD ROD	LAT	LEAVING AIR TEMPERATURE, (°F)
AV	MANUAL AIR VENT	LBS	POUNDS
BAS	BUILDING AUTOMATION SYSTEM	LSV	LIQUID LINE SOLENOID VALVE
BB	BASEBOARD HEATER	LP	LIQUID PETROLEUM GAS
BD	BYPASS DAMPER	LVG	LEAVING
BD	BACK DRAFT DAMPER	LWT	LEAVING WATER TEMPERATURE (°F)
BFF	BELOW FINISHED FLOOR	MA	MIXED AIR (OA + RA)
BHP	BRAKE HORSEPOWER	MAU	MAKE-UP AIR UNIT
BMS	BUILDING MANAGEMENT SYSTEM	MAX	MAXIMUM
BOD	BOTTOM OF DUCT	MBH	1,000 BTU PER HOUR
BOE	BOTTOM OF EQUIPMENT	MC	MECHANICAL WORK CONTRACTOR
BOL	BOTTOM OF LOUVER	MCC	MINIMUM CIRCUIT AMPERES
BOP	BOTTOM OF PIPE	MCC	MOTOR CONTROL CENTER
BOS	BOTTOM OF STEEL	MD	MOTORIZED DAMPER
BP	BYPASS	MIN	MINIMUM
BTUH	BTU PER HOUR	MOC	MAXIMUM OVER CURRENT PROTECTION
BWE	BAKED WHITE ENAMEL	MUW	MAKE-UP WATER
CAP	CAPACITY	MVJ	MANUAL VOLUME DAMPER
CEF	CEILING EXHAUST FAN	NC	NORMALLY CLOSED
CFH	CUBIC FEET PER HOUR	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
CFM	CUBIC FEET PER MINUTE	NI	NOT IN CONTRACT
CH	CHILLER	NO	NORMALLY OPEN
CHWP	CHILLED WATER PUMP	NO.	NUMBER
CLG	CEILING	NPPW	NON POTABLE PROCESS WATER
CONN.	CONNECTION	NTS	NOT TO SCALE
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT	OA	OUTSIDE AIR
CRU	CONDENSATE RETURN UNIT	OD	OUTSIDE DIAMETER
CT	COOLING TOWER	P	PUMP
CD	CONDENSING UNIT	PC	PLUMBING WORK CONTRACTOR
CUH	CABINET UNIT HEATER	PCF	POUNDS/CUBIC FOOT (DENSITY)
CWP	CONDENSER WATER PUMP	PH	PHASE (ELECTRICAL)
DDC	DIRECT DIGITAL CONTROL	POS.	POSITION
DDHU	DESICANT DEHUMIDIFICATION UNIT	PPH	POUNDS PER HOUR
DISC	DISCONNECT	PRV	PRESSURE REDUCING VALVE
DOAS	DEDICATED OUTSIDE AIR SUPPLY UNIT	PSF	POUNDS/SQUARE FOOT (PRESSURE)
DP	DEW POINT	PSIG	POUNDS/SQUARE INCH (ABSOLUTE PRESSURE)
DX	DIRECT EXPANSION	PSIG	POUNDS/SQUARE INCH (GAUGE PRESSURE)
EA	EXHAUST AIR	PTAC	PACKAGE TERMINAL AIR CONDITIONER
EAT	ENTERING AIR TEMPERATURE, (°F) (DBWB)	QTY	QUANTITY
EBBH	ELECTRIC BASEBOARD HEATER	RA	RETURN AIR
EC	ELECTRICAL WORK CONTRACTOR	RC	REFRIGERATION CONTRACTOR
ECM	ELECTRONICALLY COMPUTATED MOTOR	RF	RETURN FAN
EMS	ENERGY MANAGEMENT SYSTEM	RH	RELATIVE HUMIDITY
ENT	ENTERING	RLF	RELIEF AIR
EQPT	EQUIPMENT	RH	RELIEF HOOD
ERU	ENERGY RECOVERY UNIT	RTU	ROOF TOP UNIT (PACKAGED)
ESP	EXTERNAL STATIC PRESSURE	SA	SHADING COEFFICIENT
ET	EXPANSION TANK	SD	SMOKE DAMPER
EJH	ELECTRIC UNIT HEATER	SEF	SMOKE EXHAUST FAN
EVAP	EVAPORATOR (REFRIGERATION)	SEN	SENSIBLE COOLING CAPACITY, (BTU/ HR)
EWH	ELECTRIC WALL HEATER	SF	SUPPLY FAN
EWT	ENTERING WATER TEMPERATURE (°F)	SFT	SOFT WATER
EXF	EXFILTRATION AIR	SS	STAINLESS STEEL
EXH	EXHAUST	ST	STORAGE TANK
FA	FIRE ALARM	STD	STANDARD
FCU	FAN COIL UNIT	STL	STEEL
FD	FIRE DAMPER	TA	TRANSFER AIR
FF	FINISHED FLOOR	TAB	TEST AND BALANCE CONTRACTOR
FIN	FINISH	TCC	TEMPERATURE CONTROL CONTRACTOR
FLA	FULL LOAD AMPS	TDV	TRIPLE DUTY VALVE
FPC	FIRE PROTECTION CONTRACTOR	TEMP	TEMPORARY
FPM	FEET PER MINUTE	TOT	TOTAL NET CAPACITY, (BTU/HR)
FSD	FIRE / SMOKE DAMPER	TSP	TOTAL STATIC PRESSURE
FT, HD	FEET OF HEAD (PRESSURE DROP)	TE	THERMAL EXPANSION VALVE
FTU	FAN TERMINAL UNIT	TYP	TYPICAL
FV	FIELD VERIFY	UH	UNIT HEATER
GAL	GALLONS	UNLESS OTHERWISE NOTED	
GC	GENERAL WORK CONTRACTOR	UP	UP THROUGH ROOF
GPM	GALLONS PER MINUTE	V	VOLT
GPR	GAS PRESSURE REGULATOR	VAV	VARIABLE AIR VOLUME TERMINAL UNIT
GUH	GAS UNIT HEATER	VV	VENTILATION FAN
GWH	GAS WATER HEATER	VFD	VARIABLE FREQUENCY DRIVE
		VSD	VARIABLE SPEED DRIVE
		VTA	VENT TO ATMOSPHERE
		VTR	VENT TO ROOM
		W	WATT
		W	WITH
		WB	WET BULB, (°F)
		WG	WATER GAUGE
		WP	WEATHERPROOF
		WPD	WATER PRESSURE DROP

SITE LOCATION MAP



PROJECT SITE

HVAC SHEET LIST

SHEET NUMBER	SHEET NAME	CURRENT REVISION	CURRENT REVISION DESCRIPTION
M000	COVER SHEET	08/05/2022	BID SET
M100	OVERALL FLOOR PLAN	08/05/2022	BID SET
M101	OVERALL ROOF PLAN	08/05/2022	BID SET
M400	SCHEDULES	08/05/2022	BID SET
M500	DETAILS	08/05/2022	BID SET

PROJECT DESIGN CONDITIONS										
OUTDOOR DESIGN CONDITIONS	LOCATION	ZONE	SUMMER 1% (F DB / F WB)	WINTER 99% (F DB)	DESIGN CAT	SITE CLASS	WIND (MPH)			
		SOUTHEAST, NY	5A	90.2 / 72.9	9.5	B	D	115		
ENVELOPE CONDITIONS	AREA	LOW WALL R-VALUE	UPPER WALL R-VALUE	ROOF R-VALUE	GLASS U-VALUE	GLASS GC	PARTITION U-VALUE			
	WAREHOUSE	1.5	14 (SEE NOTE 1)	20	0.35	N/A	N/A			
APPLICABLE CODES										
2020 NY STATE BUILDING CODE										
2020 NY STATE MECHANICAL CODE										
2020 NY STATE ENERGY CONSERVATION CODE										
LOAD ASSUMPTIONS										
ROOM DESIGN PARAMETERS	SPACE TYPE	COOLING	HEATING	PEOPLE	LIGHTING	MISC	OUTDOOR AIR			
	WAREHOUSE	F / MAX RH	F / MIN RH	SOFT / PERSON	SENS. GAIN / PERSON (BTUH)	LATENT GAIN / PERSON (BTUH)	W / SQFT	W / SQFT	CFM / PERSON	CFM / SQFT
		N/A	55	N/A	N/A	N/A	N/A	N/A	5	0.06

NOTES:
1. WALL INSULATION PROVIDED FROM 4'-0" AFF. TO DECK ON NON-DOCK WALLS AND 13'-0" AFF. TO DECK ON DOCK WALLS.

NO.	DATE	DESCRIPTION
A	02/04/2022	QA/QC SET
B	03/29/2022	QA/QC SET
C	05/20/2022	QA/QC SET
D	06/16/2022	PERMIT SET
E	07/25/2022	BID REVIEW SET
F	08/05/2022	BID SET



NOT FOR CONSTRUCTION

M000