







ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
BCU	BUILDING CONTROL UNIT
BTU	BRITISH THERMAL UNIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
COMM.	COMMUNICATION
CV	CONTROL VALVE
(D)	DEMOLISH
DB	DRY BULB
DCV	DEMAND CONTROLLED VENTILATION
DEG. F	DEGREES FAHRENHEIT
DIA	DIAMETER
DX	DIRECT EXPANSION
'E'	ELECTRICAL CONTRACTOR
(E)	EXISTING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATING
ESP	EXTERNAL STATIC PRESSURE
FAI	FRESH AIR INTAKE
FD	FLOOR DRAIN
FLA	FULL LOAD AMPS
FT. H2O	FEET OF WATER
'G'	GENERAL CONSTRUCTION CONTRACTOR
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
H	HEIGHT
'H'	HVAC CONTRACTOR
HP	HORSEPOWER
IN.	INCHES
IN. W.C. (W.G.)	INCHES WATER COLUMN (WATER GAUGE)
KW	KILOWATTS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LCD	LIQUID CRYSTAL DISPLAY
LDB	LEAVING DRY BULB TEMPERATURE
LPR	STEAM CONDENSATE RETURN
LPS	LOW PRESSURE STEAM
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
M	METER
MAX	MAXIMUM
MBH	1,000 BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MMF	MANUFACTURER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OAI	OUTDOOR AIR INTAKE
OD	OUTER DIAMETER
OED	OPEN ENDED DUCT
'P'	PLUMBING CONTRACTOR
(P)	PROPOSED
PD	PRESSURE DROP
PSIG	LBS / SQUARE INCH (GAUGE PRESSURE)
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
SAT	SUPPLY AIR TEMPERATURE
SEER	SEASONAL ENERGY EFFICIENCY RATING
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
W	WIDTH
WB	WET BULB
WMS	WIRE MESH SCREEN

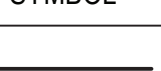

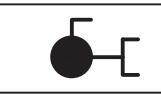
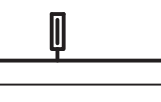
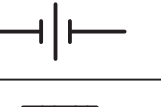



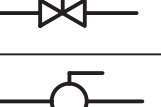
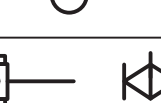
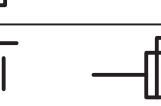

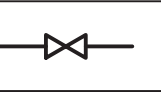

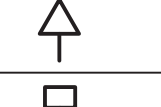
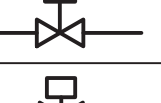
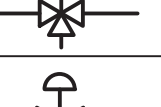

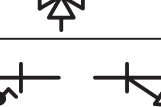


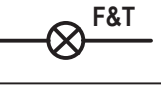

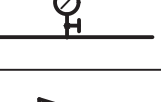
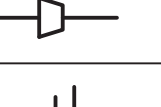
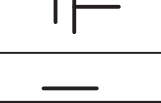


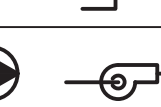
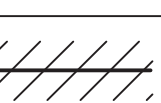
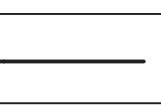
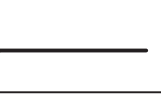




DUCTWORK LEGEND

SYMBOL	ABBREV	DESCRIPTION
		DUCTWORK BRANCH CONNECTION
	VD	VOLUME DAMPER
	CD	ROUND FACE SUPPLY DIFFUSER
	SEE AIR DEVICE SCHEDULE	SIDEWALL SUPPLY, RETURN OR EXHAUST GRILLE/REGISTER
	SEE AIR DEVICE SCHEDULE	SQUARE FACE SUPPLY DIFFUSER
	SEE AIR DEVICE SCHEDULE	BOTTOM RETURN OR EXHAUST GRILLE/REGISTER
	FC	FLEXIBLE CONNECTION
		TURNING VANES
		RECTANGULAR TO ROUND TRANSITION
	AL	ACOUSTICAL LINING
		END CAP
	SEE AIR DEVICE SCHEDULE	SUPPLY DIFFUSER WITH DIRECTIONAL FLOW (SOLID HATCH INDICATES BLANK OFF PANEL)
		SUPPLY DUCT DROP (TURN DOWN)
		RETURN/EXHAUST DUCT DROP (TURN DOWN)
		SUPPLY DUCT RISE
		RETURN/EXHAUST DUCT RISE
	DSD	DUCT SMOKE DETECTOR
	MD	MOTORIZED DAMPER WITH ACTUATOR
	AD	ACCESS DOOR
	FD/AD	FIRE DAMPER WITH ACCESS DOOR
	FSD/AD	FIRE SMOKE DAMPER WITH ACCESS DOOR
		FAN
		WORK TO BE REMOVED
		POINT OF DISCONNECTION FROM EXISTING
		POINT OF CONNECTION TO EXISTING

CONTROLS LEGEND

SYMBOL	ABBREV	DESCRIPTION
		CARBON MONOXIDE SENSOR
		THERMOSTAT
		DIGITAL TEMPERATURE SENSOR
		HUMIDITY SENSOR
		CARBON DIOXIDE SENSOR
		PRESSURE SENSOR

PIPING LEGEND


SYMBOL	ABBREV	DESCRIPTION
		NEW WORK
		PIPING DOWN/ PIPING UP
		BALL VALVE WITH HOSE END CONNECTION
	TH	THERMOMETER
	U	UNION
	FPC	FLEXIBLE PIPE CONNECTION
		DIRECTION OF FLOW
	PSR	PRESSURE SAFETY AND RELIEF VALVE
	PRV	PRESSURE REDUCING VALVE
	BV	BALL VALVE
	BA	BALANCING VALVE
	BFV	BUTTERFLY VALVE
		TEMPERATURE SENSOR WITH THERMOWELL
	GA	GATE VALVE
	GB	GLOBE VALVE
	AV	AUTOMATIC AIR VENT
	CV	2-WAY ELECTRONIC CONTROL VALVE
	CV	3-WAY ELECTRONIC CONTROL VALVE
	CV	2-WAY PNEUMATIC CONTROL VALVE
	CV	3-WAY PNEUMATIC CONTROL VALVE
	STR	STRAINER WITH BLOW OFF VALVE WITH HOSE END CONNECTION
	FD	FLOOR DRAIN
		AIR SEPARATOR
		STEAM TRAPS (INDICATE TYPE)
	CH	CHECK VALVE
	PG	PRESSURE GAUGE WITH GAUGE COCK
	RED	REDUCER
	CO	CLEANOUT END CAP
		PIPE GUIDE
		PIPE ANCHOR
		CAPPED PIPE
		PUMP
		WORK TO BE REMOVED
		POINT OF DISCONNECTION FROM EXISTING
		POINT OF CONNECTION TO EXISTING
	TDV	TRIPLE DUTY VALVE

GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. THE CONTRACTOR, BY PRESENTING THEIR BID FOR THE WORK, REPRESENTS THAT HE/SHE HAS INSPECTED THE SITE AND IS COMPLETELY FAMILIAR WITH THE SCOPE OF WORK AND ALL FIELD CONDITIONS RELATED TO, AND AFFECTING THE WORK AND ITS PERFORMANCE. EXCEPTIONS AFFECTING THE WORK AND ITS PERFORMANCE, OR CONFLICTS BETWEEN FIELD CONDITIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF BIDS.
3. PERFORM ALL WORK IN ACCORDANCE WITH THE PLUMBING CODE, FIRE CODE, MECHANICAL CODE, ENERGY CONSERVATION CONSTRUCTION CODE, AND FUEL GAS CODE OF NEW YORK STATE AND THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION.
4. COMPLY WITH THE NATIONAL ELECTRIC CODE AND THE REQUIREMENTS OF DIVISION 26 FOR ALL ELECTRICAL INSTALLATIONS.
5. FIRE STOP ALL OPENINGS IN FIRE RATED CONSTRUCTION FOR PIPING, DUCTWORK, CONDUIT, ETC. PROVIDE FIRE DAMPERS AND ACCESS DOORS IN ALL OPENINGS IN FIRE RATED FLOORS, PARTITIONS, AND WALLS FOR DUCTWORK AS PER THE MECHANICAL CODE OF NEW YORK STATE. (SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED CONSTRUCTION.)
6. DO NOT SCALE DRAWINGS. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY; THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. COORDINATE CONTRACT DOCUMENTS, PROJECT REQUIREMENTS, WORK OF OTHERS, AND EQUIPMENT AND MATERIALS PURCHASED WITH FIELD DIMENSIONS. INSTALL ALL EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS TO PROVIDE PROPER CLEARANCE FOR INSTALLATION, OPERATION, AND MAINTENANCE. CONTRACTOR'S INTENDED MEANS AND METHODS OF INSTALLATION AND CONTRACTOR'S FABRICATED ITEMS, SHALL ENSURE A PROPER "FIT" AND INSTALLATION. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER DURING THE SUBMITTAL PHASE FOR RESOLUTION PRIOR TO PURCHASING ANY EQUIPMENT.
7. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS, WHERE HEADROOM AND SPACE CONDITIONS ARE INADEQUATE, NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH INSTALLATION. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE FROM FINISHED FLOOR TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
8. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION. MAKE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK. OBTAIN THE APPROVAL OF THE ARCHITECT/ENGINEER FOR MODIFICATIONS.
9. PROVIDE PRODUCTS OF ONE MANUFACTURER WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF MATERIAL OR EQUIPMENT IS REQUIRED.
10. INSTALL ALL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS. REFER TO DETAILS FOR ADDITIONAL PIPING AND EQUIPMENT INSTALLATION REQUIREMENTS.
11. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER TO ENSURE MANUFACTURER CERTIFIED ACCURACY.
12. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL PIPING AND DUCT TRANSITIONS REQUIRED FOR FINAL CONNECTIONS TO EQUIPMENT.
13. COORDINATE LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS WITH ALL OTHER TRADES. COORDINATE ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURE WITH GENERAL CONSTRUCTION WORK.
14. COORDINATE INSTALLATION OF SUPPLY AND RETURN GRILLES WITH INSTALLATION OF FINISHED CEILINGS.
15. COMPLETE ALL PRESSURE TESTS BEFORE ANY MECHANICAL EQUIPMENT, DUCTWORK, OR PIPING INSULATION IS APPLIED.
16. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). PERFORM ALL TESTING, ADJUSTING, AND BALANCING IN ACCORDANCE WITH THE SPECIFICATIONS.
17. MAKE ALL ATTACHMENTS TO JOISTS, TRUSSES, OR JOIST GIRDERS AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. THE USE OF C-CLAMPS IS NOT PERMITTED.
18. PROVIDE CONCRETE PADS A MINIMUM OF 6 INCHES HIGH FOR ALL FLOOR MOUNTED EQUIPMENT. EXTEND PAD 4 INCHES BEYOND THE EQUIPMENT ON ALL SIDES.
19. INTERNALLY LINE ALL SUPPLY AND RETURN DUCTWORK WITHIN 20 FEET UPSTREAM AND DOWNSTREAM OF FANS WITH "1" THICK INSULATION. INTERNALLY LINED DUCTWORK MEETING THIS REQUIREMENT SHALL ALSO BE PROVIDED WITH EXTERNALLY APPLIED INSULATION AS REQUIRED BY THE SPECIFICATIONS. SEE SPECIFICATION SECTION 230719 FOR ADDITIONAL REQUIREMENTS.
20. PROVIDE TRAPPED DRAIN PIPING FROM DRAIN PANS OF ALL COOLING COILS, FANS, AND OTHER ACTIVE DRAINS EXPOSED TO SYSTEM AIR STREAM. PROVIDE TRAP AT CONNECTION. WATER SEAL DEPTH 1 INCH GREATER THAN UNIT OPERATING PRESSURE. DIRECT DRAINS TO NEAREST FLOOR DRAIN, MOP SINK, OR OTHER LOCATION APPROVED BY THE ARCHITECT/ENGINEER.
21. INSTALL PIPING, DUCTWORK, AND CONDUIT CONCEALED IN AREAS HAVING HUNG CEILINGS AND/OR FURRED SPACES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

LEGENDS/ABBREVIATIONS NOTES

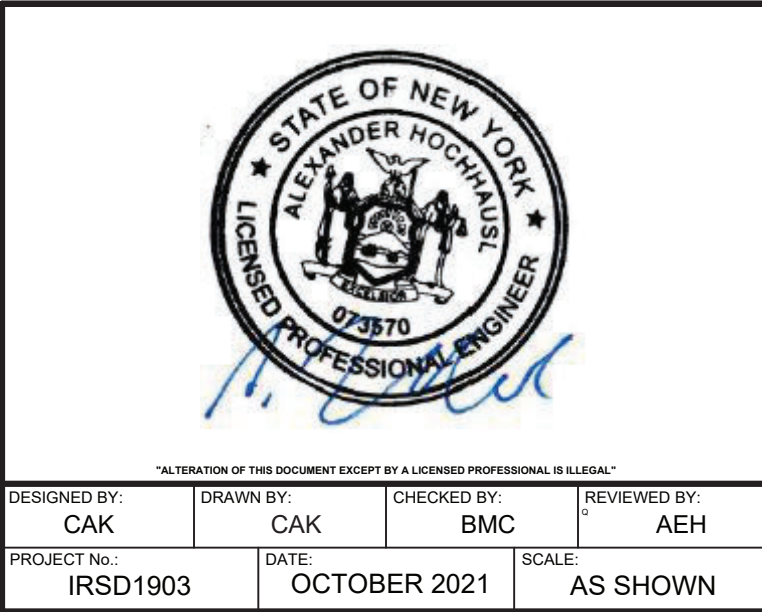
1. ABBREVIATIONS AND SYMBOLS ON THIS SHEET DO NOT DEFINE THE SCOPE OF WORK



architects
+
engineers

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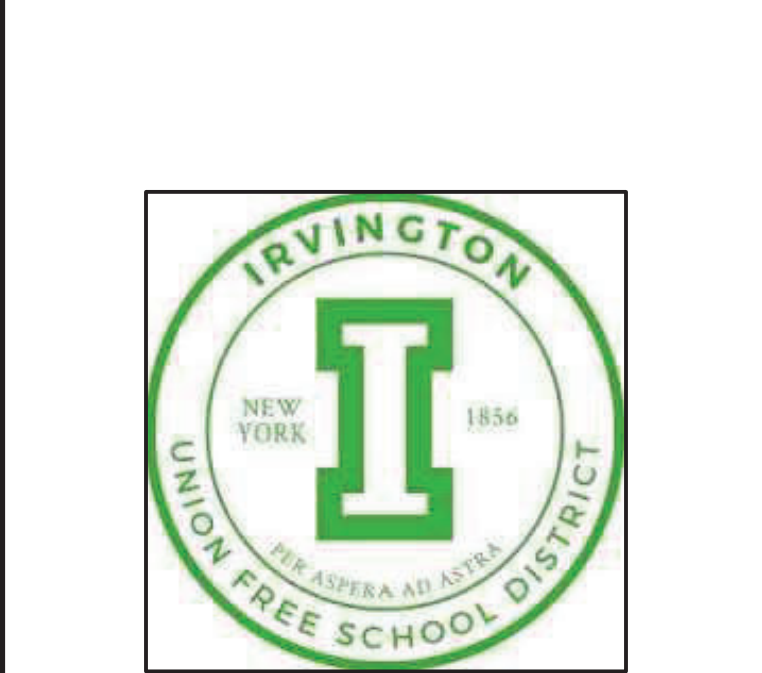
CONSULTANTS:

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CLIENT

**Irvington Union Free
School District**

Facilities Storage Building at Irvington Campus



**Irvington Campus
40 N. Broadway
Irvington, NY 10533**

SED Number:66-04-02-02-2-022-001

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

STATUS **FINAL BID DOCUMENT**

SHEET TITLE

SHEET TITLE

HVAC HVAC LEGENDS, SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES

DRAWING No.

H0.0

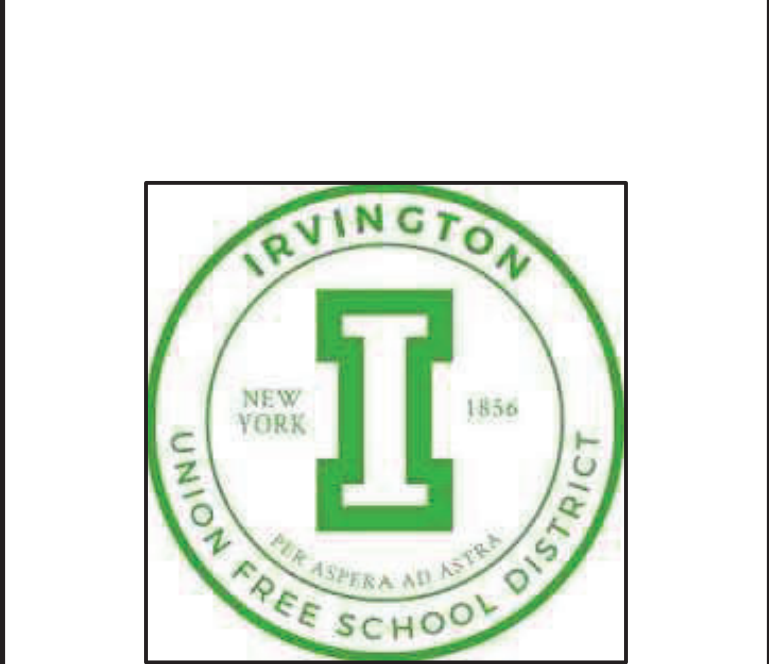
CONSULTANTS:		

MARK	DATE	DESCRIPTION
1	XX-XX-XX	FINAL BID DOCUMENT

<div><div><div>STATE OF NEW YORK</div><div>ALEXANDER HOCHNUS</div><div>073570</div><div>REGISTERED PROFESSIONAL ENGINEER</div></div><div></div></div>			
DESIGNED BY: CAK	DRAWN BY: CAK	CHECKED BY: BMC	REVIEWED BY: AEH
PROJECT NO: IRSD1903	DATE: OCTOBER 2021	SCALE: AS SHOWN	

CLIENT
Irvington Union Free School District

**Facilities Storage Building
at Irvington Campus**



**Irvington Campus
40 N. Broadway
Irvington, NY 10533**

SED Number:66-04-02-02-2-022-001

CONTRACT	CONTRACT G GENERAL CONSTRUCTION
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STATUS	FINAL BID DOCUMENT
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SHEET TITLE	HVAC HIGH SCHOOL FACILITIES STORAGE BUILDING HVAC CONSTRUCTION
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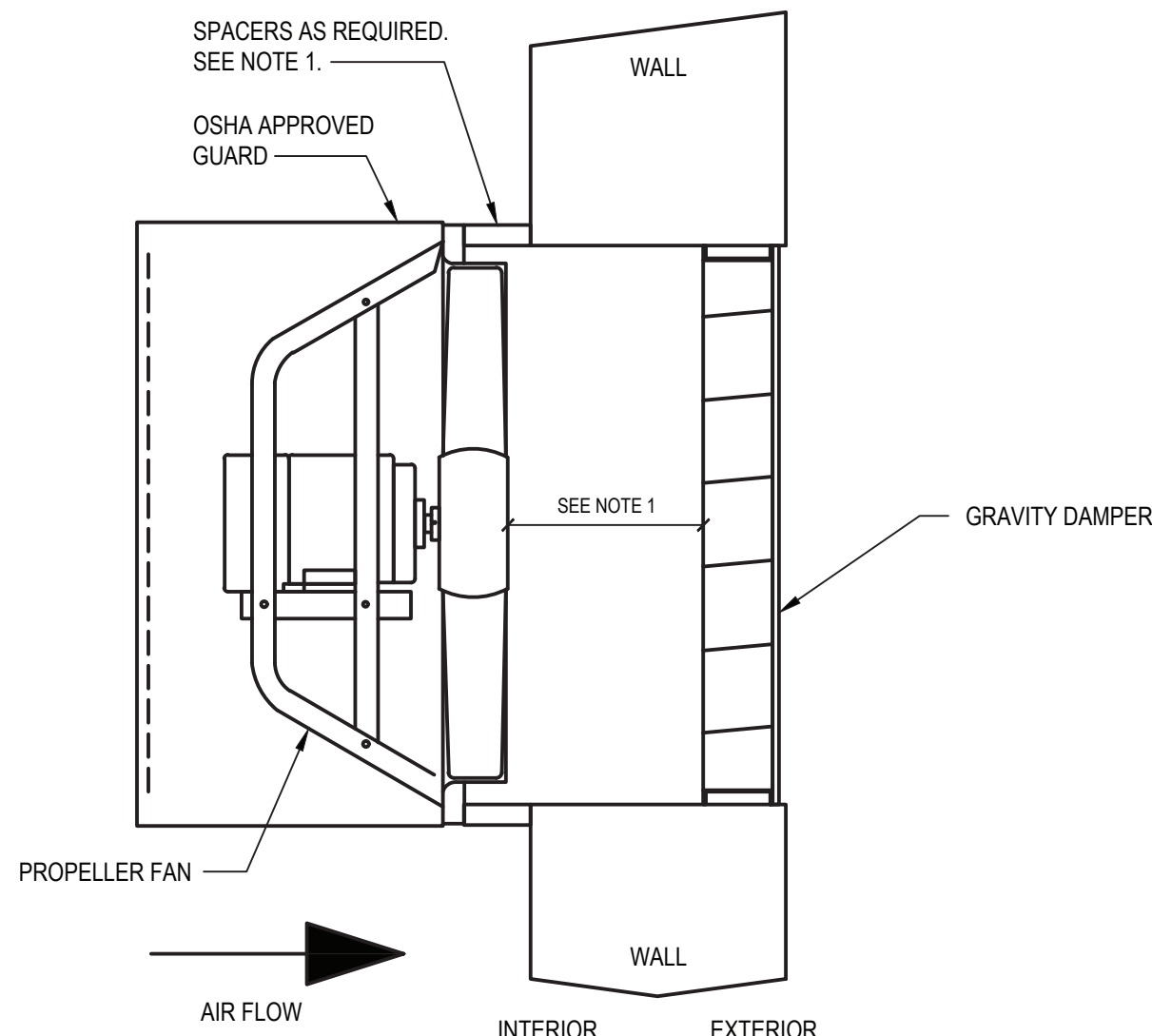
DRAWING No.	H1.0
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GENERAL NOTES

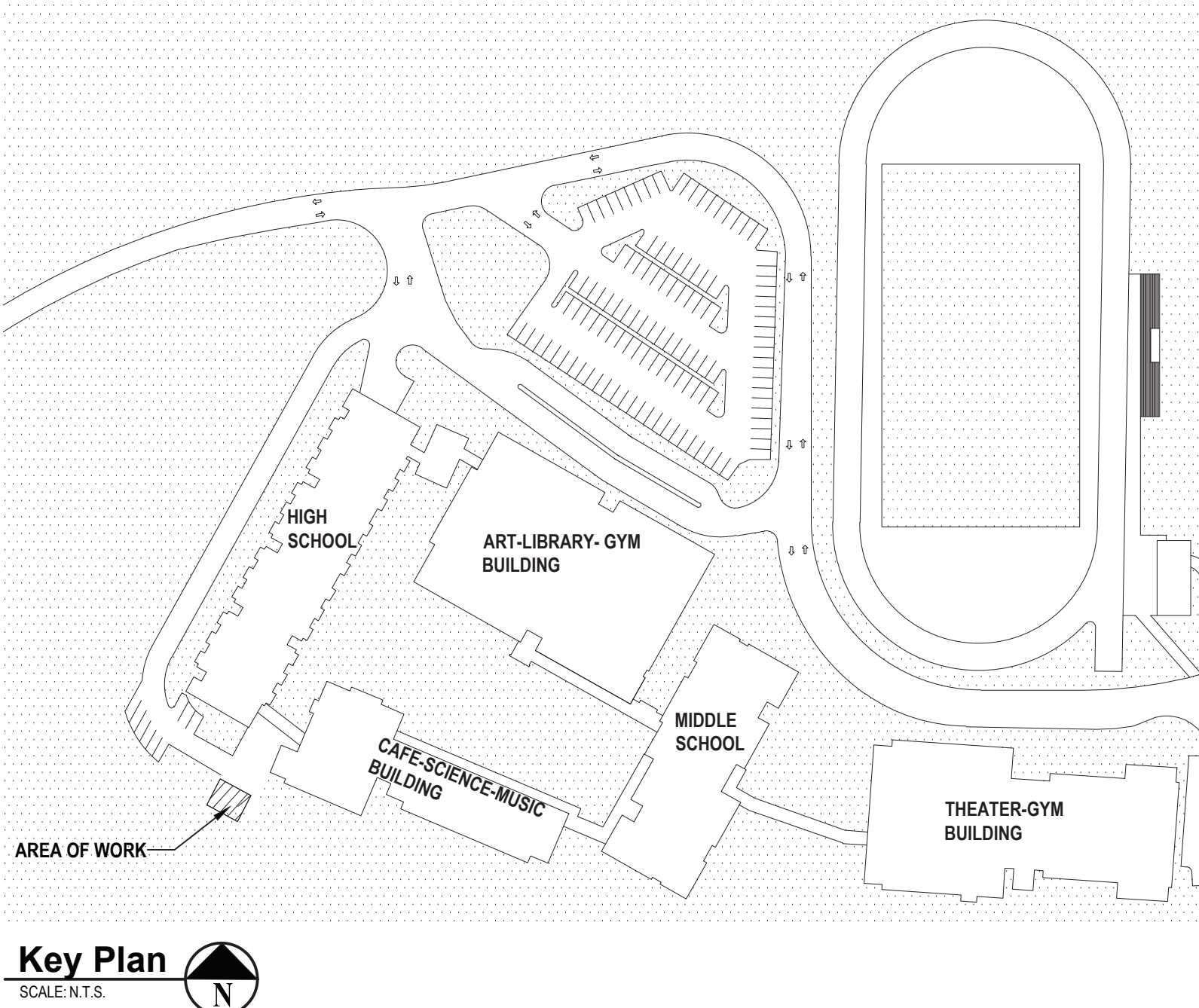
- A. THESE DRAWINGS SERVE AS A GRAPHICAL REPRESENTATION OF THE INTENDED SCOPE OF WORK AND CONSTITUTE ONE PORTION OF THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN THESE DRAWINGS AND THE SPECIFICATIONS.
- B. ALL WORK SHALL BE IN COMPLIANCE WITH ALL FEDERAL AND NEW YORK STATE APPLICABLE BUILDING CODE.
- C. REFER TO SEQUENCE OF OPERATIONS FOR DETAILS REGARDING EXHAUST FAN (GX-1) CONTROLS.
- D. ALL WORK SHALL BE IN COMPLIANCE WITH MANUFACTURER'S CLEARANCE REQUIREMENTS.
- E. DO NOT SCALE DRAWINGS. LINE WORK IS SHOWN FOR REFERENCE ONLY.
- F. COORDINATE FINAL LOCATIONS OF SENSORS / SWITCHES WITH OWNER.
- G. COORDINATE NEW WORK WITH OTHER TRADES.

KEY WORK NOTES

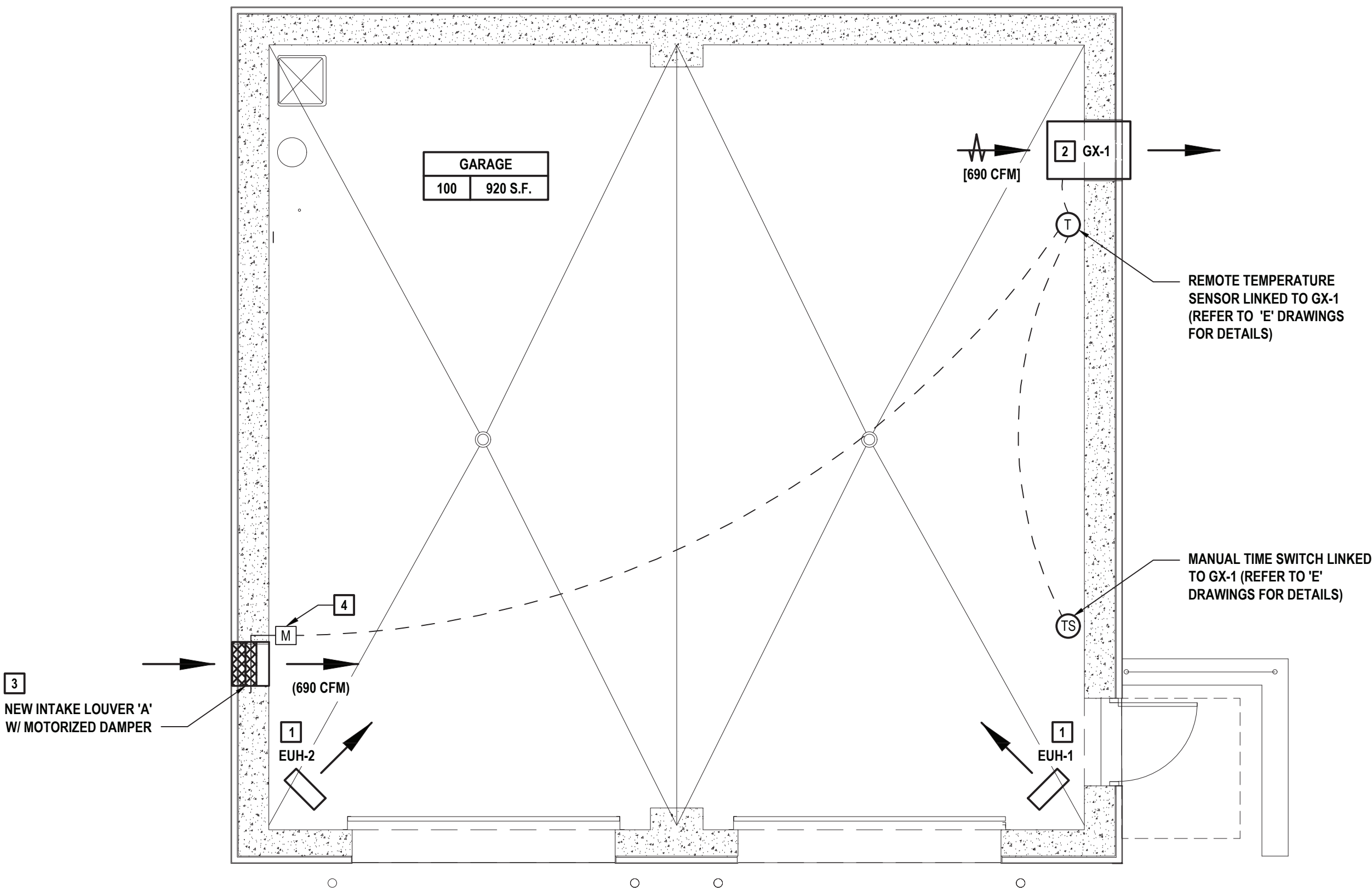
- 1 PROVIDE AND INSTALL NEW ELECTRIC UNIT HEATER EUH-1, 2 WITH APPROPRIATE MOUNTING HARDWARE. MOUNT NEW ELECTRIC UNIT HEATER AS PER MANUFACTURER'S SPECIFICATIONS.
- 2 PROVIDE AND INSTALL NEW SIDEWALL EXHAUST FAN GX-1 WITH APPROPRIATE MOUNTING HARDWARE. MOUNT NEW SIDEWALL EXHAUST FAN AS PER MANUFACTURER'S SPECIFICATIONS. COORDINATE FINAL HEIGHT WITH ARCHITECTURAL / STRUCTURAL PLANS, AND EXISTING SLOPE OF GRADE.
- 3 PROVIDE AND INSTALL NEW SIDEWALL INTAKE LOUVER 'A' WITH APPROPRIATE MOUNTING HARDWARE. MOUNT NEW SIDEWALL INTAKE LOUVER AS PER MANUFACTURER'S SPECIFICATIONS. COORDINATE FINAL HEIGHT WITH ARCHITECTURAL / STRUCTURAL PLANS, AND EXISTING SLOPE OF GRADE.
- 4 NEW MOTORIZED DAMPER SHALL BE INTERLOCKED WITH NEW EXHAUST FAN GX-1. DAMPER SHALL OPEN WHEN GX-1 ACTIVATES (REFER TO SPECIFICATIONS AND ELECTRICAL DRAWINGS FOR DETAILS).



2 **Sidewall Fan with OSHA Guard**
SCALE: NTS (DETAIL #)



Key Plan
SCALE: N.T.S.



1 **Facilities Storage Building Plan**
SCALE: 1/4"=1'-0"

UNIT HEATERS

EQUIPMENT NO.	LOCATION	AREA SERVED	FAN DATA			TOTAL CAPACITY (MBH)	AIR DATA		HEATING COIL DATA			BASIS OF DESIGN INFORMATION				REMARKS
			FLOW (CFM)	HP	VOLTS/ PHASE		TEMP. CHANGE (DEG. F)	THROW (FT.)	ELECTRIC DATA			MNF	MODEL NO.	NOMINAL DIMENSIONS L x W x H	NOMINAL OPERATING WEIGHT (LBS.)	
EUH-1, 2	SEE PLANS	STORAGE AREA	650	1/30	208/1	25.6	37	18	208/1	7.5	36	QMARK	MUH-07-8	19 x 7.5 x 21.75	38	1-4

- NOTES:
1. PROVIDE AND INSTALL MANUFACTURER SPECIFIED MOUNTING BRACKET
 2. SINGLE POLE INTERNAL THERMOSTAT ACCESSORY (UHMT1)
 3. 3-POLE POWER DISCONNECT SWITCH (MPDS60)
 4. OUTLET MESH (BIRD SCREEN)

FANS

EQUIPMENT NO.	LOCATION	SYSTEM SERVED	PERFORMANCE/CONSTRUCTION REQUIREMENTS				BASIS OF DESIGN INFORMATION						REMARKS
			CFM	EXT S. P. (IN. W.C.)	FAN/MOTOR RPM	BHP	MNF	MODEL NO.	NOMINAL DIMENSIONL x W. x H	NOMINAL OPERATING WEIGHT (LBS.)	ELECTRICAL DATA		
											VOLTS/PHASE	MOTOR HP	
GX-1	SEE PLANS	STORAGE AREA	690	0.3	776	0.18	GREENHECK	SBE-1H20-4	38 x 26.25 x 26.25	152	115/1	1/4	1-4

- NOTES:
1. LONG WALL HOUSING WITH OSHA GUARD
 2. NEMA 3R POWERED DISCONNECT SWITCH
 6. DAMPER MOUNTED WD-320-PB-22X22
 7. SINGLE POINT POWER CONNECTION
 8. DAMPER ACTUATOR (MP-310)

AIR OUTLETS

DESIGNATION	TYPE	BASIS OF DESIGN: MANUFACTURER	BASIS OF DESIGN: MODEL NO.	NOM. DIMENSIONS	FREE AREA (%)	VOLUME (CFM)	FREE AREA VELOCITY (FPM)	PRESSURE DROP (IN. W.G.)	REMARKS
A	INTAKE LOUVER	GREENHECK	ESD-635HP	20 x 20 x 6	42.5	690	566	0.05	1-3

- NOTES:
1. (20x20) VCD-23 LOW LEAKAGE 3V BLADE VOLUME CONTROL DAMPER
 2. HONEYWELL MS4103F1225 ACTUATOR
 3. GREENHECK POC RETAINING ANGLE