

Chiller Replacement
16140 148th Ave, Spring Lake, MI 49456

CONSTRUCTION DOCUMENTS 03/30/2023



SPRING LAKE
PUBLIC SCHOOLS



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PBA Project No.: 2023.0004

CODES AND STANDARDS

2015	MICHIGAN BUILDING CODE
2015	MICHIGAN MECHANICAL CODE
2018	MICHIGAN PLUMBING CODE
2017	MICHIGAN ELECTRICAL RULES (2017 NEC, PLUS PART 8 RULES)
2015	MICHIGAN REHABILITATION CODE
2016	SCHOOL FIRE SAFETY RULES (2021 LIFE SAFETY CODE, PLUS AMENDMENTS)
2015	MICHIGAN UNIFORM ENERGY CODE (ANSI/ASHRAE/IESNA STANDARD 90.1-2013)

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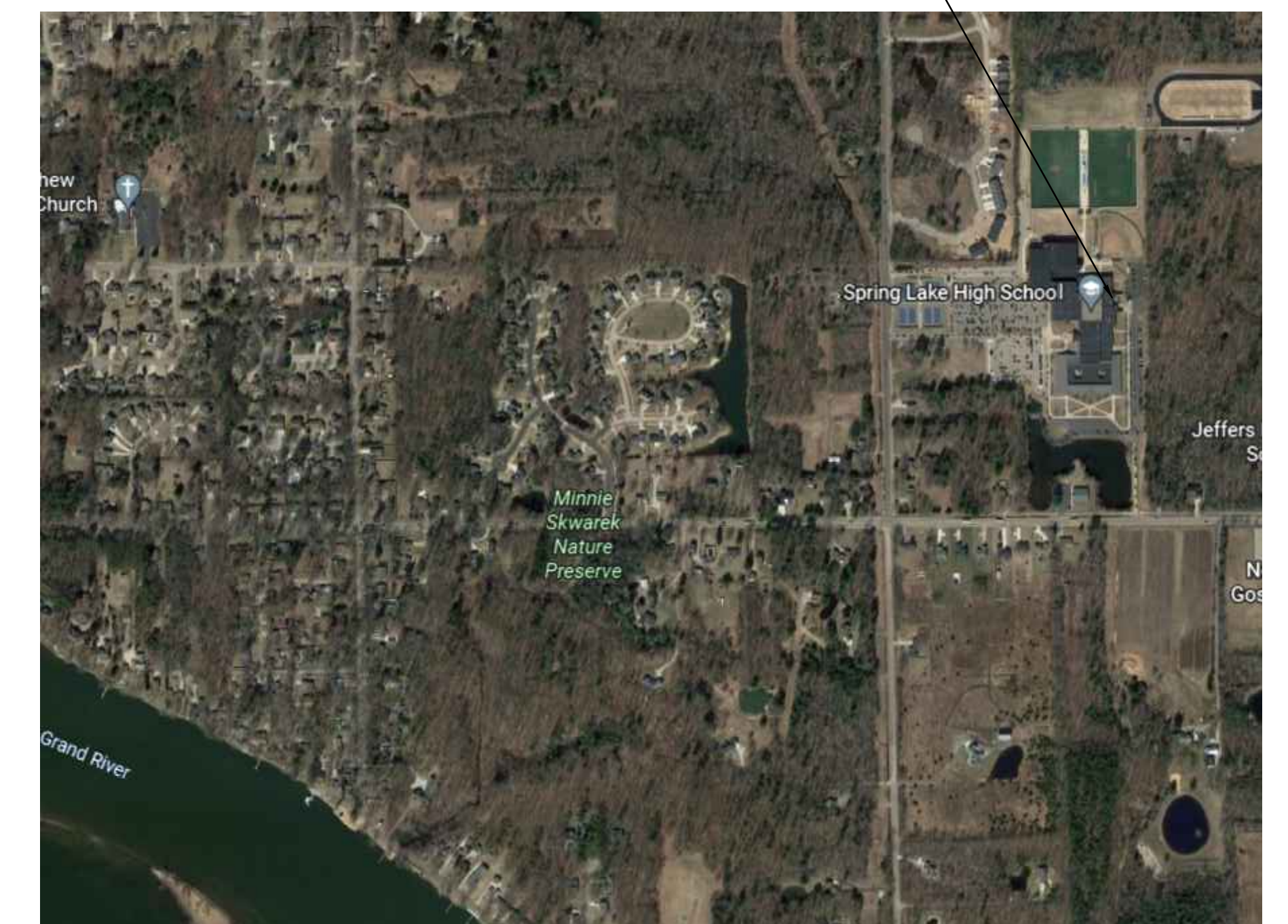
MECHANICAL DRAWING INDEX

<u>SHEET NO.</u>	<u>SHEET TITLE</u>
M0.1	MECHANICAL STANDARDS AND DRAWING INDEX
MD1.1	PARTIAL MECHANICAL DEMOLITION PLAN
M3.1	PARTIAL HVAC PIPING NEW WORK PLAN
M6.1	MECHANICAL DETAILS
M7.1	MECHANICAL SCHEDULES
M8.1	TEMPERATURE CONTROLS

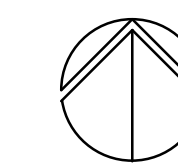
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ELECTRICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
E0.1	ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2	ELECTRICAL STANDARD SCHEDULES
ED1.1	PARTIAL ELECTRICAL DEMOLITION PLAN
E3.1	PARTIAL POWER NEW WORK PLAN
E5.1	ONE LINE DIAGRAM



PROJECT LOCATION-



LOCATION MAP
NO SCALE

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AC (#)	COMPRESSED AIR	FD	FLOOR DRAIN	PACU	PACKAGED AIR CONDITIONING UNIT
ACC	COMPRESSED AIR (SPECIFIC PSIG)	FDC	FUNNEL FLOOR DRAIN	PBD	PARALLEL BLADE DAMPER
AV	AUTOMATIC AIR VENT	PH	FIRE HYDRANT	PC	PUMPED CONDENSATE
ACC	AIR COOLED CONDENSER	PHR	FIRE HOSE CABINET	PCW	PROCESS COOLING WATER
ACCU	AIR COOLED CONDENSING UNIT	PHR	FIRE HOSE RACK	PCWR	PROCESS COOLING WATER RETURN
ACD	ACCESS DOOR	PHV	FIRE HOSE VALVE	PCWS	PROCESS COOLING WATER SUPPLY
AE	AREA DRAIN	PL	FULL LOAD AMPS	PD	PRESSURE DROP (FEET OF WATER)
AE	AIR EXTRACTOR	FLR	FLOOR	PH	PERMETER HEAT
AFF	ABOVE FINISHED FLOOR	FM	FLOW METER	PHR	PERMETER HEAT RETURN
AHU	AIR HANDLING UNIT	FS	FLOW MEASURING STATION	PHS	PERMETER HEAT SUPPLY
ALT	ALTERNATE	FOT	FLAT ON TOP	PNL	PANEL
AMP	AMPERE	FPM	FEET PER MINUTE	PPM	PARTS PER MILLION
APD	AIR PRESSURE DROP	PM	PRESSURE	PRSS	PRESSURE
ARGON	ARGON	FPM	FIRE PUMP	PRV	PRESSURE REDUCING VALVE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS	FTPU	FAN POWERED (AIR) TERMINAL UNIT	PSAN	PUMPED SANITARY
ASR	AUTOMATIC SPRINKLER RISER	FLOOR SINK	FLOOR SINK	PSD	PUMPED STORM
ATD	AIR TRANSFER DUCT	FSC	FOOD SERVICE EQUIPMENT CONTAINER	PSI	POUNDS PER SQUARE INCH
AUX	AUXILIARY	FEET	FEET	PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
AV	ACID VENT	FTR	FINISHED TIE RADIATION	PSIG	POUNDS PER SQUARE INCH - GAUGE
AVTR	ACID VENT THROUGH ROOF	CV	FACE VELOCITY	PW	PURIFIED WATER
AW	ACID WASTE	C	NATURAL GAS	PWR	PURIFIED WATER RETURN
		GA	GAUGE	PWS	PURIFIED WATER SUPPLY
BAS	BUILDING AUTOMATION SYSTEM	GAL	GALLON	(R)	RELOCATED
BCU	BLOWER COIL UNIT	GRH	GRAVITY RELIEF HOOD	R	RETURN GRILLE OR REGISTER
BDF	BACKDRAFT DAMPER	GPM	GALLONS PER HOUR	RA	RETURN AIR
BDF	BELOW FINISHED FLOOR	GPM	GALLONS PER MINUTE	RAT	RETURN AIR TEMPERATURE
BFD	BACKFLOW PREVENTER	GSAN	GREASE SANITARY WASTE	RC	RAIN CONDUCTOR
BHP	BRAKE HORSEPOWER			RCP	RADIANT CEILING PANEL
BDP	BOTTOM OF DUCT	H	HYDROGEN	RD	ROOF DRAIN
BDP	BOTTOM OF PIPE	HB	HOSE BIBB	RECO	REQUIRED
BTU	BRITISH THERMAL UNIT	HC	HEATING COIL	REF	ROOF EXHAUST FAN
BTU	BRITISH THERMAL UNIT PER HOUR	HD	HOT DECK	RF	REFRIGERANT
BVC	BEVERAGE CONDUIT	HEPA	HIGH EFFICIENCY PARTICULATE ARRESTANCE	RH	RELATIVE HUMIDITY
BW	BACKWATER VALVE	HL	HIGH LIMIT	RL	REFRIGERANT LIQUID
		HOA	HAND/OFF/AUTO	RFLA	RELIEF AIR
C	COMMON	HP	HEAT PUMP	REV	REVOLUTIONS PER MINUTE
CAP	CAPACITY	HPWA	HIGH PRESSURE DOMESTIC COLD WATER	RPPA	REDUCED PRESSURE BACKFLOW PREVENTION DE
CAV	CONSTANT AIR VOLUME	HPHW	HIGH PRESSURE DOMESTIC HOT WATER	RPPA	REDUCED PRESSURE BACKFLOW PREVENTION DE
CB	CATCH BASIN	HPHWR	HIGH PRESSURE DOMESTIC HOT WATER RETURN	RS	REFRIGERANT SUCTION
CC	COOLING COIL	HPL	HEAT PUMP LOOP	RTU	ROOF TURTLE UNIT
CD	COLD DUCT	HPLR	HEAT PUMP LOOP RETURN	S	SUPPLY AIR DIFFUSER OR GRILLE
CDI	CONDENSATE DRAIN	HPLS	HEAT PUMP LOOP SUPPLY	SA	SOUND ATTENUATOR
CFM	CUBIC FEET PER HOUR	HT	HEATING	SAT	SUPPLY AIR
CFM	CUBIC FEET PER MINUTE	HVC	HEATING	SAN	SANITARY WASTE
CH	CHILLER	HTV	HEATING VENTILATING	SA	SUPPLY AIR TEMPERATURE
CH	CHILLED WATER	HTVAC	HEATING, VENTILATING, AIR CONDITIONING	SECT	SECTION
CHWR	CHILLED WATER RETURN	HHW	HOT WATER HEATING	SCCR	SHORT CIRCUIT CURRENT RATING
CHWS	CHILLED WATER SUPPLY	HHR	HOT WATER HEATING RETURN	SH	SUPPLY FAN
CLS	COOLING	HWS	HOT WATER HEATING SUPPLY	SH	SHOWER
CND	CONDENSATE	HW	DOMESTIC HOT WATER	SK	SINK
CND (#)	CONDENSATE (SPECIFIC PSIG)	HW(L)	DOMESTIC HOT WATER (SPECIFIC TEMP °)	SMR	SNOW MELT RETURN
CO	CLEAN OIL	HWR	DOMESTIC HOT WATER RETURN	SNOW MELT SUPPLY	
CO2	CARBON DIOXIDE	HX	HEAT EXCHANGER	SP	STATIC PRESSURE
CONTR	CONTINUATION OR CONTINUED	HZ	HERTZ	SPEC	SPECIFICATION
CONTR	CONTRACTOR	IAQ	INDOOR AIR QUALITY	SPKLR	SPEAKER
COP	COEFFICIENT OF PERFORMANCE	IDO	INSIDE DIAMETER	SQFT	SQUARE FOOT/ SQUARE FEET
CP	CIRCULATING PUMP	IE	INVERT ELEVATION	S/S	START/STOP
CRU	CONDENSATE RETURN UNIT	IN	INTAKE HOOD	SS	SERVICE SINK
CSS	CLINICAL SERVICE SINK	IN	INCHES	ST	STORM
CT	COOLING TOWER	IN	INCHES	STD	STANDARD
CUH	CABINET UNIT HEATER	IR	INFRARED HEATER	STK	STACK
CW	DOMESTIC COLD WATER	IW	INDIRECT WASTE	STM	STEAM
CW	DOMESTIC COLD WATER - FILTERED	JP	JANITOR'S CLOSET	STM (#)	STEAM (SPECIFIC PSIG)
CWR	CONDENSER WATER RETURN	JC	JOCKEY PUMP	S/W	SWITCH/WINTER
CWS	CONDENSER WATER SUPPLY	KA	THOUSAND AMP	SW	SUMMER
DAT	DAMP AND TRAP	KA	THOUSAND AMP	T	TRANSFER GRILLE
DA	DISCHARGE AIR	KAT	KILOWATT	TC	TEMPERATURE CONTROL
DAT	DISCHARGE AIR TEMPERATURE	KWH	KILOWATT-HOUR	TC	TEMPERING COIL
DB	DRY BULB	LAT	LEAVING AIR TEMPERATURE	TCP	TEMPERATURE CONTROL PANEL
DDC	DIRECT DIGITAL CONTROL	LAB	LABORATORY	TD	TRENCH DRAIN
DEG	DEGREE	LAV	LAVATORY	TEMP	TEMPERATURE
DFU	DRAINAGE FIXTURE UNITS	LBS	POUNDS	TEMP	TEMPERATURE
DI	DIAMETER	LDB	LEAVING DRY BULB	THA	TOTAL HEAT ABSORBED
DMPR	DAMPER	LL	LOW LIMIT	THR	TERMINAL HEATING
D/N	DAY/NIGHT	LPL	LOW PRESSURE COND		

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CARBON DIOXIDE SENSOR		OCCUPANCY SENSOR
	CARBON MONOXIDE SENSOR		PRESSURE TRANSMITTER
	DIFFERENTIAL PRESSURE TRANSMITTER		STATIC PRESSURE SENSOR OR PROBE
	FLOW METER		VALVE – 2 WAY CONTROL VALVE
	GUARD FOR STAT OR SENSOR		VALVE – 3 WAY CONTROL VALVE
	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)		THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)

SPRING SYMBOLS		DUCTWORK SYMBOLS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	AIR VENT - AUTOMATIC		AIR TERMINAL UNIT
	AIR VENT - MANUAL		AIR TERMINAL UNIT WITH HEATING COIL
	BACKFLOW PREVENTER		VENTURI AIR TERMINAL UNIT
	CATCH BASIN		VENTURI AIR TERMINAL UNIT WITH HEATING COIL
	CIRCULATING PUMP		DAMPER - HORIZONTAL FIRE (EXISTING, NEW)
	CLEAN OUT - IN FLOOR		DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NEW)
	CLEAN OUT - FLANGE		DAMPER - SMOKE (EXISTING, NEW)
	DIRECTION OF FLOW		DAMPER - VERTICAL FIRE (EXISTING, NEW)
	DIRECTION OF PITCH - DOWN		DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW)
	FINNED TUBE RADIATION		DAMPER - BACK DRAFT
	FIRE PROTECTION - SIAMESE CONNECTION - FREE STANDING		DAMPER - MOTORIZED
	FIRE PROTECTION - SIAMESE CONNECTION - WALL MOUNTED		DAMPER - VOLUME (MANUALLY ADJUSTABLE)
	FIRE PROTECTION - SPRINKLER HEAD, CONCEALED		DIFFUSER - BLANK OFF
	FIRE PROTECTION - SPRINKLER HEAD, PENDANT		DIFFUSER - LINEAR SLOT
	FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT		DIFFUSER - SQUARE OR RECTANGULAR
	FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL		DUCT CROSS SECTION - SUPPLY
	FLOOR DRAIN		DUCT CROSS SECTION - RETURN
	FLOOR DRAIN - ELEVATION		DUCT CROSS SECTION - EXHAUST
	FLOOR DRAIN - FUNNEL		DUCT - FLEXIBLE CONNECTION
	FLOOR DRAIN - FUNNEL, ELEVATION		DUCT - FLEXIBLE DUCT
	FLOW MEASURING DEVICE (FOR TEST AND BALANCING)		DUCT TAKE-OFF - ROUND CONICAL
	FLOW SWITCH		DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	FLOW METER		ELBOW - RECTANGULAR WITH TURNING VANES
	HOSE BIBB		ELBOW - RECTANGULAR/ROUND SMOOTH RADIUS
	MANHOLE		ELBOW DOWN - RECTANGULAR
	OPEN SITE DRAIN		ELBOW DOWN - ROUND
	PIPE - ANCHOR		ELBOW UP - RECTANGULAR
	PIPE - CAP OR PLUG		ELBOW UP - ROUND
	PIPE - ELBOW DOWN		FAN - AXIAL
	PIPE - ELBOW UP		FAN - CENTRIFUGAL (ELEVATION)
	PIPE - EXPANSION JOINT OR COMPENSATOR		HEATING COIL
	PIPE - FLANGE		INCLINED DROP IN DIRECTION OF AIRFLOW
	PIPE - HOSE AND BRAID FLEXIBLE CONNECTION		INCLINED RISE IN DIRECTION OF AIRFLOW
	PIPE - RUBBER FLEXIBLE CONNECTION		INTAKE OR RELIEF HOOD
	PIPE - GUIDE		REGISTER - RETURN OR EXHAUST
	PIPE - TEE DOWN		REGISTER - RETURN WITH BOOT
	PIPE - TEE UP		REGISTER - TRANSFER GRILLE
	PIPE - UNION		ROOF EXHAUST FAN
	PRESSURE AND TEMPERATURE TEST PLUG		TRANSITION - CONCENTRIC
	PRESSURE GAUGE AND COCK		TRANSITION - ECCENTRIC
	REDUCER - CONCENTRIC		UNIT HEATER - HORIZONTAL THROW
	REDUCER - ECCENTRIC		UNIT HEATER - VERTICAL THROW
	ROOF/OVERFLOW DRAIN		
	STEAM TRAP - FLOAT AND THERMOSTATIC		
	STEAM TRAP - BUCKET		
	STRAINER		
	STRAINER WITH VALVE AND BLOW-OFF		
	THERMOMETER		
	TRAP		
	VALVE - ANGLE		
	VALVE - BALL		
	VALVE - BUTTERFLY		
	VALVE - COMBINATION (i.e. BALANCE VALVE TO 0.5 GPM)		
	VALVE - COMBINATION BALANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM)		
	VALVE - CHECK		
	VALVE - SPRING CHECK		
	VALVE - GAS (MANUAL)		
	VALVE - GLOBE		
	VALVE - ISOLATION		
	VALVE - NEEDLE		
	VALVE - OS&Y		
	VALVE - PLUG		
	VALVE - PRESSURE REGULATING		
	VALVE - PRESSURE REDUCING		
	VALVE - PRESSURE RELIEF		
	VALVE - PRESSURE & TEMPERATURE RELIEF		
	VENT THROUGH ROOF		
	WALL HYDRANT		
	WATER METER		

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FLANGE		ELBOW DOWN - RECTANGULAR
	FLEX CONNECTION		ELBOW DOWN - ROUND
	STRAINER - BASKET		ELBOW UP - RECTANGULAR
	STRAINER - Y TYPE		ELBOW UP - ROUND
	VALVE - 2 WAY CONTROL		HEATING COIL
	VALVE - 3 WAY CONTROL		INCLINED DROP IN DIRECTION OF AIRFLOW
	VALVE - BUTTERFLY		INCLINED RISE IN DIRECTION OF AIRFLOW
	VALVE - CHECK		TRANSITION - CONCENTRIC
	VALVE - DETECTOR CHECK		TRANSITION - ECCENTRIC
	VALVE - OS&Y HORIZONTAL STEM		
	VALVE - OS&Y VERTICAL STEM		

SHEET NO.	SHEET TITLE
M0.1	MECHANICAL STANDARDS AND DRAWING INDEX
M0.1	PARTIAL MECHANICAL DEMOLITION PLAN
M3.1	PARTIAL HVAC PIPING NEW WORK PLAN
M6.1	MECHANICAL DETAILS
M7.1	MECHANICAL SCHEDULES
M8.1	TEMPERATURE CONTROLS

STANDARD METHODS OF NOTATION

S-1
109
350-4

R-1
22-02
640-2

21-101

Y10-101

(2)WC-1
10-1

8

8ø

22x10
18x14ø

1

EF
1

HW-1

NEW SYSTEM COMPONENT

EXISTING SYSTEM COMPONENT TO REMAIN

POINT OF NEW CONNECTION SYMBOL

SECTION OR PLAN NUMBER

SHEET WHERE SECTION IS DRAWN

AREA OF ENLARGEMENT

PLAN NUMBER

SHEET WHERE ENLARGED PLAN IS DRAWN

SECTION OR PLAN NUMBER

SECTION OR ENLARGED PLAN

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

SHEET WHERE SECTION IS CUT OR ENLARGED PLAN IS REFERENCED

SHEET M10

SHEET M1.1

MATCH LINE

HEAVY LINE WEIGHT INDICATES NEW WORK

LIGHT LINE WEIGHT INDICATES EXISTING EQUIPMENT OR REFERENCED INFORMATION

GRAY LINE INDICATES BACKGROUND INFORMATION

DASHED LINES INDICATE PIPING ROUTED BELOW SLAB OR GRADE

HATCH MARKS INDICATE EQUIPMENT OR MATERIALS TO BE DISCONNECTED AND REMOVED.

SUPPLY DIFFUSER WITH SCHEDULE TAG "1",
10" DIAMETER NECK SIZE
350 CFM TYPICAL FOR 4

RETURN REGISTER WITH SCHEDULE TAG "1",
22"x 22" NECK SIZE
640 CFM TYPICAL FOR 2
EXHAUST REGISTER E DESIGNATION SIMILAR.

AIR TERMINAL UNIT WITH HEATING COIL NO. 101
WITH SERVICE CLEARANCE SHOWN

VENTURI AIR TERMINAL WITH HEATING COIL NO. 101
WITH SERVICE CLEARANCE SHOWN

PLUMBING FIXTURE UNIT IDENTIFICATION TAG
WATER CLOSET TYPE "1"
TYPICAL FOR 2

PIPE DIAMETER NOTATION
ALL SIZES IN INCHES

DUCT SIZE NOTATION
ALL SIZES IN INCHES

OVAL DUCT
RECTANGULAR DUCT

CONSTRUCTION KEY NOTE (NUMBER) OR
DEMOLITION KEY NOTE (LETTER)

EQUIPMENT DESIGNATION,
(i.e. EXHAUST FAN NUMBER 1)

PIPING RISER DESIGNATION
(i.e. HOT WATER RISER NUMBER 1)

REVISION

PROJECT TITLE

SPRING LAKE PUBLIC SCHOOLS
SPRING LAKE HIGH SCHOOL
CHILLER REPLACEMENT

16140 148th Ave. Spring Lake, MI 49456

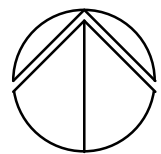
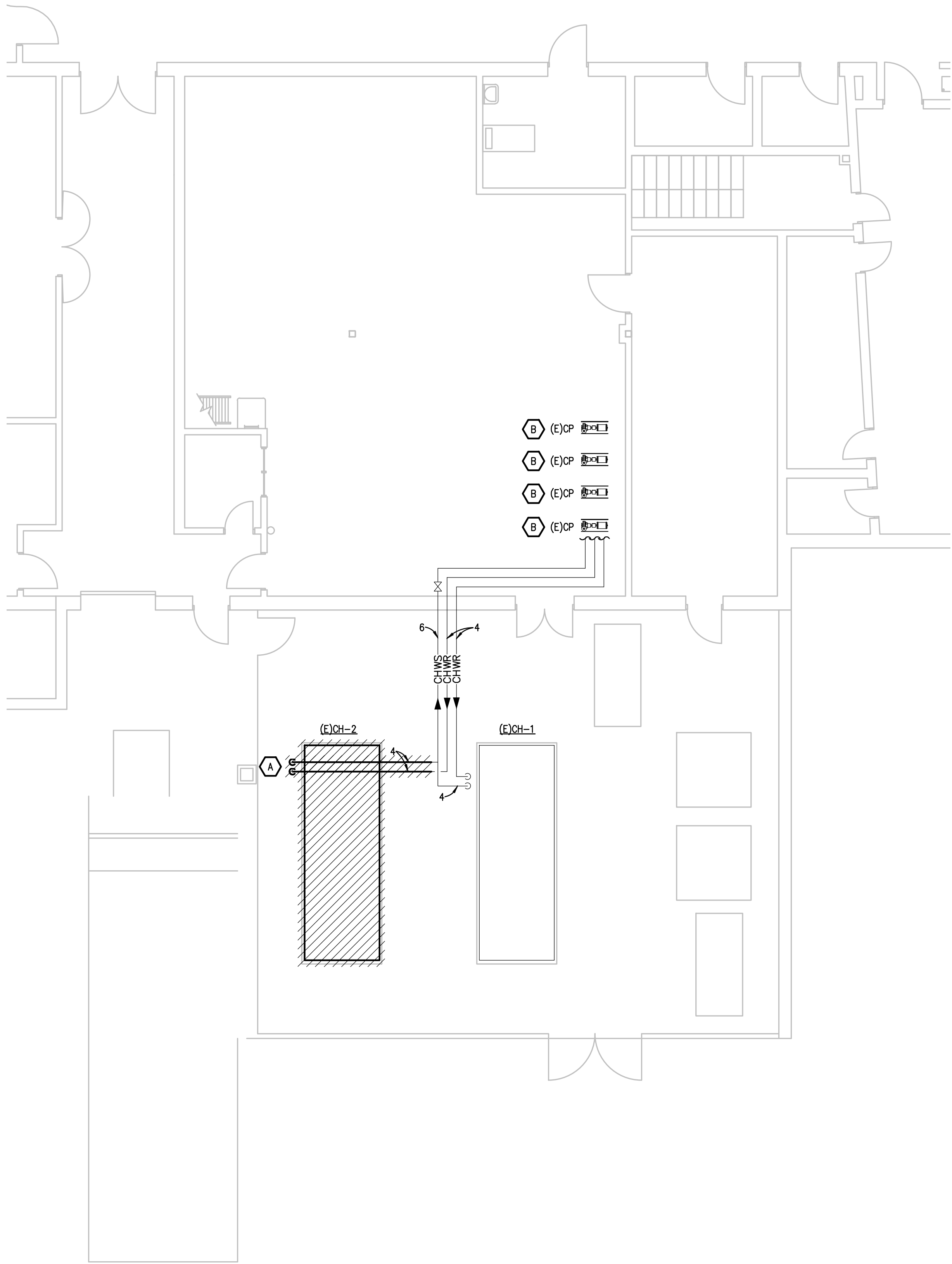
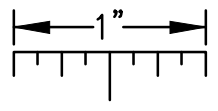
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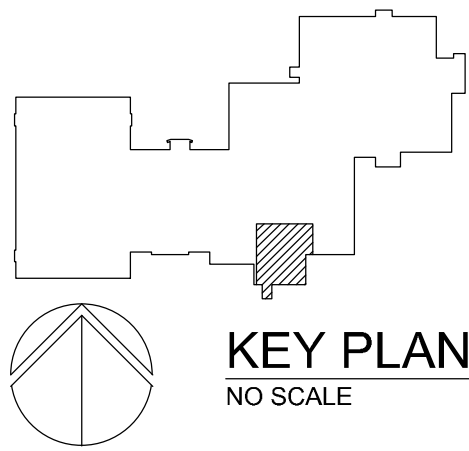
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THE FOLLOWING DIMENSION EQUALS
ONE INCH WHEN PRINTED TO SCALE.



PARTIAL MECHANICAL DEMOLITION PLAN
SCALE: 1/8" = 1' - 0"



KEY PLAN
NO SCALE

MECHANICAL DEMOLITION GENERAL NOTES:

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

DEMOLITION KEY NOTES:

- A. REMOVE EXISTING CHILLER AND CHWS/R PIPING. REMOVE GRADE MOUNTED PIPING SUPPORTS.
- B. PROVIDE PRE-CONSTRUCTION WATER FLOW AND HEAD PRESSURE READINGS ON CHILLED WATER PUMPS.

PROJECT TITLE

SPRING LAKE PUBLIC SCHOOLS
SPRING LAKE HIGH SCHOOL
CHILLER REPLACEMENT

16140 148th Ave, Spring Lake, MI 49456

SHEET TITLE

PARTIAL MECHANICAL
DEMOLITION PLAN

DATE

03/30/2023

ISSUE

CONSTRUCTION
DOCUMENTS

SHEET No.

MD1.1

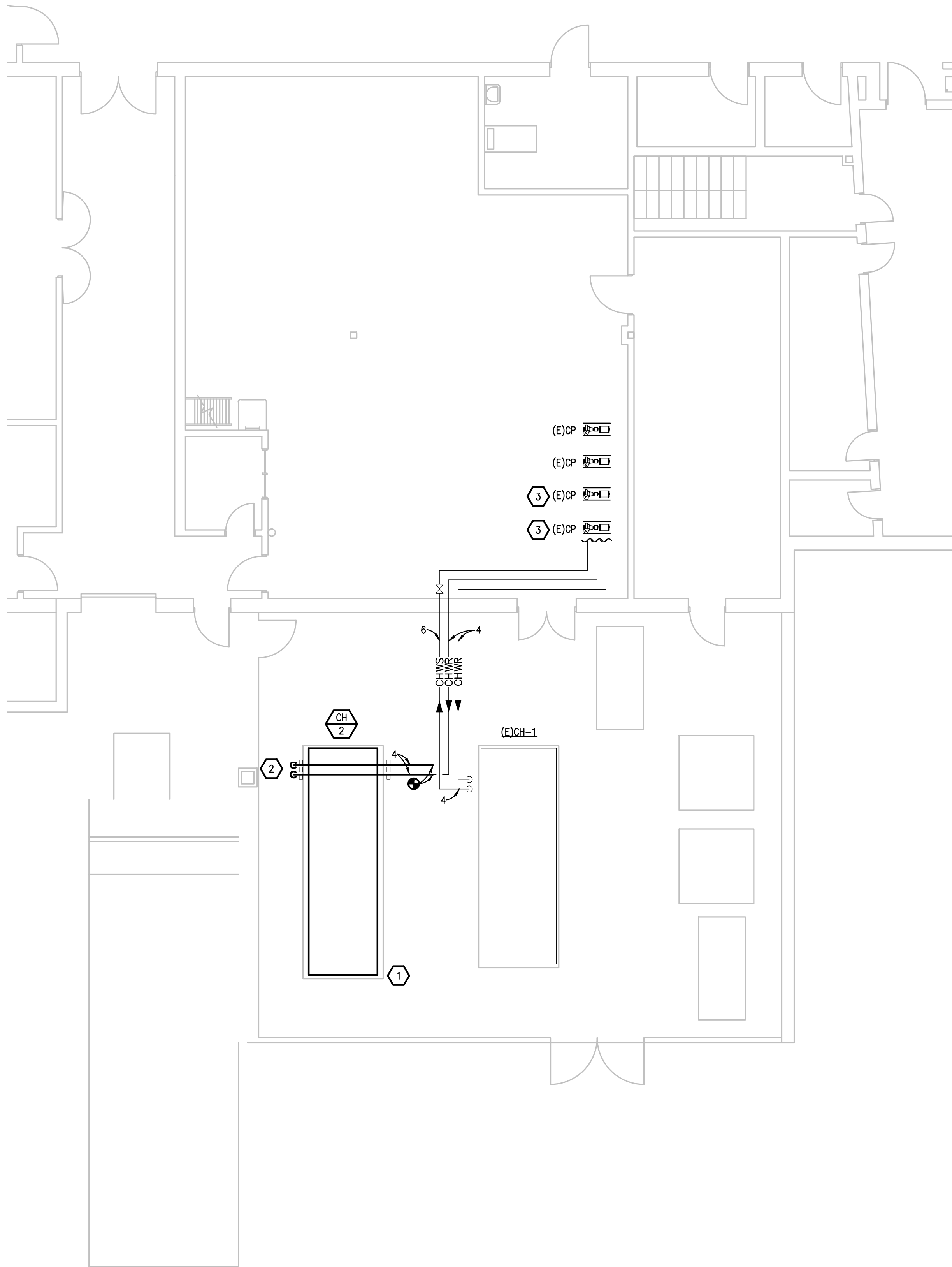
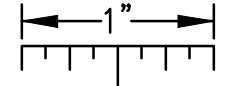
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ONE INCH WHEN PRINTED TO SCALE.



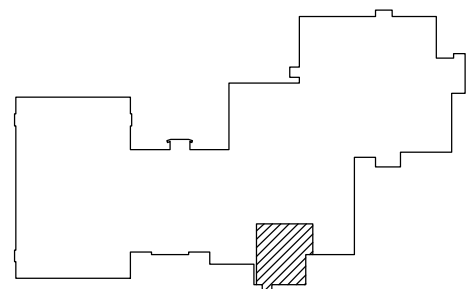
PARTIAL HVAC PIPING NEW WORK PLAN
SCALE: 1/8" = 1' - 0"

HVAC PIPING GENERAL NOTES:

- THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
- INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
- COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
- SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
- COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
- BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
- REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

CONSTRUCTION KEY NOTES:

- EXISTING EQUIPMENT PAD IS 23'-9" x 8'-7". EXTEND EXISTING EQUIPMENT PAD AS REQUIRED TO ACCOMMODATE NEW CHILLER.
- PROVIDE AND INSTALL GRADE MOUNTED PIPING SUPPORTS AS REQUIRED TO SUPPORT NEW PIPING.
- BALANCE EXISTING CHILLED WATER PUMP TO NEW FLOW.



KEY PLAN
NO SCALE

PROJECT TITLE

SPRING LAKE PUBLIC SCHOOLS
SPRING LAKE HIGH SCHOOL
CHILLER REPLACEMENT

16140 148th Ave, Spring Lake, MI 49456

SHEET TITLE

PARTIAL HVAC PIPING NEW
WORK PLAN

DATE

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ISSUE

CONSTRUCTION
DOCUMENTS

SHEET No.

M3.1

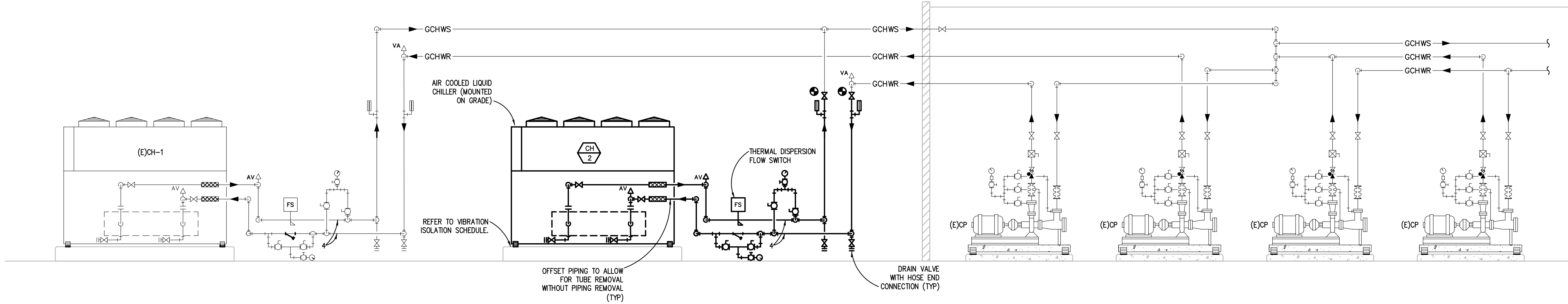
REVISION

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CHILLER 1 & 2 SYSTEM PIPING DIAGRAM
NO SCALE

PROJECT TITLE

SPRING LAKE PUBLIC SCHOOLS
SPRING LAKE HIGH SCHOOL
CHILLER REPLACEMENT

16140 148th Ave, Spring Lake, MI 49456

SHEET TITLE

MECHANICAL DETAILS

DATE

03/30/2023

ISSUE

CONSTRUCTION
DOCUMENTS

SHEET No.

M6.1

REVISION

REVISION

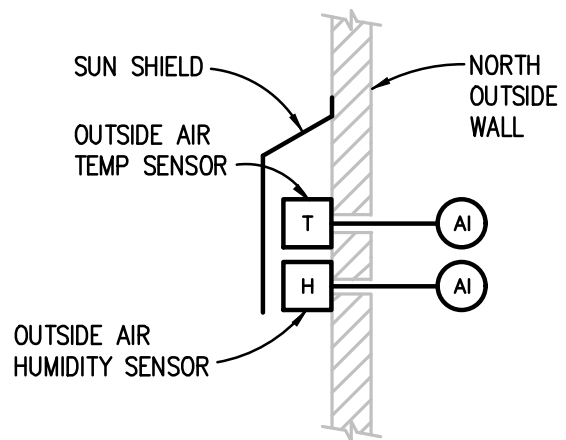
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TEMPERATURE CONTROL - SYMBOLS LIST

SCHEMATIC SYMBOLS	
SYMBOL	DESCRIPTION
	AIR FLOW CONTROLLER
	AQUASTAT, STRAP ON BULB
	CARBON DIOXIDE SENSOR - WALL MOUNTED
	CARBON DIOXIDE SENSOR - DUCT MOUNTED
	CARBON MONOXIDE SENSOR - WALL MOUNTED
	CARBON MONOXIDE SENSOR - DUCT MOUNTED
	CURRENT SWITCH
	CURRENT TRANSMITTER
	DAMPER - OPPOSED BLADE
	DAMPER - PARALLEL BLADE
	DAMPER MOTOR
	DIFFERENTIAL PRESSURE TRANSMITTER
	DIFFERENTIAL PRESSURE SWITCH
	FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE
	FIRE ALARM SYSTEM, ADDRESSABLE INTERFACE MODULE
	FLOW MEASURING STATION
	FLOW METER
	FLOW SWITCH
	FREEZESTAT
	GAUGE - FLOW
	GAUGE - PRESSURE
	GAUGE - TEMPERATURE
	GUARD FOR STAT OR SENSOR
	HUMIDIFIER
	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)
	HUMIDITY SENSOR, DUCT MOUNTED
	LEVEL SWITCH OR TRANSMITTER
	LIMIT SWITCH
	LINE - ELECTRIC
	LINE - INSTRUMENT AIR
	MOTOR STARTER
	OCCUPANCY SENSOR
	PILOT LIGHT OR BEACON R - RED LENS A - AMBER LENS B - BLUE LENS G - GREEN LENS
	PRESSURE SWITCH
	PRESSURE TRANSMITTER
	RELAY, ELECTRIC
	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)
	SIGNAL - DDC/BAS, ANALOG INPUT
	SIGNAL - DDC/BAS, ANALOG OUTPUT
	SIGNAL - DDC/BAS, DIGITAL INPUT
	SIGNAL - DDC/BAS, DIGITAL OUTPUT
	SIGNAL - PACKAGED EQUIPMENT, ANALOG INPUT
	SIGNAL - PACKAGED EQUIPMENT, ANALOG OUTPUT
	SIGNAL - PACKAGED EQUIPMENT, DIGITAL INPUT
	SIGNAL - PACKAGED EQUIPMENT, DIGITAL OUTPUT

- NOTES:
- SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.
 - REFER TO MECHANICAL STANDARDS ON DRAWING M0.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.



OA SENSOR INSTALLATION DETAIL

- NO SCALE
- NOTES:
- TC CONTRACTOR SHALL REPLACE EXISTING OUTSIDE AIR TEMPERATURE AND HUMIDITY SENSORS.

SCHEMATIC SYMBOLS (CONT.)	
SYMBOL	DESCRIPTION
	SMOKE DETECTOR - DUCT MOUNTED
	SMOKE DETECTOR - SPACE MOUNTED
	START/STOP RELAY
	STATIC PRESSURE TRANSMITTER
	STATIC PRESSURE SENSOR OR PROBE
	SWITCH
	TEMPERATURE SENSOR - RIGID ELEMENT IN WELL
	TEMPERATURE SENSOR - STRAP ON BULB
	TEMPERATURE SENSOR - DUCT MOUNTED AVG ELEMENT
	TEMPERATURE SENSOR - DUCT MOUNTED RIGID ELEMENT
	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
	THERMOSTAT FOR NIGHT SETBACK
	TIMER SWITCH
	TRANSFORMER
	VALVE - 2 WAY CONTROL VALVE
	VALVE - 3 WAY CONTROL VALVE
	VARIABLE FREQUENCY CONTROLLER
	VELOCITY SENSOR
	VIBRATION SWITCH
	VOLTAGE SENSOR

WIRING SYMBOLS	
SYMBOL	DESCRIPTION
	AUDIBLE DEVICE (AS DEFINED ON TC DRAWINGS)
	COIL - MOTOR STARTER CONTACTOR
	COIL - RELAY
	COIL - TIME DELAY RELAY
	COIL - VARIABLE SPEED DRIVE CONTACTOR
	COIL - EP OR SOLENOID VALVE
	CONTACT - INSTANT OPERATING, NO
	CONTACT - INSTANT OPERATING, NC
	CONTACT - TIMED AFTER COIL IS ENERGIZED, NOTC
	CONTACT - TIMED AFTER COIL IS ENERGIZED, NCTO
	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NOTO
	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NCTC
	GROUND
	PILOT LIGHT, SINGLE PHASE R - RED LENSE A - AMBER LENS B - BLUE LENS G - GREEN LENS
	PILOT LIGHT, WITH PUSH-TO-TEST
	PUSH BUTTON - MOMENTARY CONTACT, NO
	PUSH BUTTON - MOMENTARY CONTACT, NC
	PUSH BUTTON - MOMENTARY CONTACT, NO & NC
	PUSH BUTTON - MOMENTARY, NO (MUSHROOM HEAD)
	PUSH BUTTON - MOMENTARY, NC (MUSHROOM HEAD)

WIRING SYMBOLS (CONT.)	
SYMBOL	DESCRIPTION
	SWITCH - 2 POSITION SELECTOR
	SWITCH - 3 POSITION SELECTOR HAND/OFF/AUTO
	SWITCH - FLOW (AIR, WATER, ETC.), NO
	SWITCH - FLOW (AIR, WATER, ETC.), NC
	SWITCH - LIMIT, NO
	SWITCH - LIMIT, NO, HELD CLOSED
	SWITCH - LIMIT, NC
	SWITCH - LIMIT, NC, HELD OPEN
	SWITCH - LIQUID LEVEL, NO
	SWITCH - LIQUID LEVEL, NC
	SWITCH - MANUAL SPST, NO
	SWITCH - MANUAL SPST, NC
	SWITCH - MANUAL DPST, NC
	SWITCH - MANUAL DPST, NC
	SWITCH - MANUAL SPDT
	SWITCH - MANUAL DPDT
	SWITCH - PRESSURE & VACUUM, NO
	SWITCH - PRESSURE & VACUUM, NC
	SWITCH - TEMPERATURE ACTUATED, NO
	SWITCH - TEMPERATURE ACTUATED, NC
	THERMAL OVERLOAD, SINGLE PHASE
	THERMAL OVERLOAD CONTACTS - 3 PHASE
	TRANSFORMER
	WIRE TERMINATION AT DEVICE
	WIRE TO WIRE TERMINATION
	WIRING NOT CONNECTED

ABBREVIATION	DESCRIPTION
BAS	BUILDING AUTOMATION SYSTEM
DDC	DIRECT DIGITAL CONTROL
TC	TEMPERATURE CONTROLS
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NCTC	NORMALLY CLOSED TIMED CLOSED
SPST	SINGLE POLE SINGLE THROW
SPDT	SINGLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPDT	DOUBLE POLE DOUBLE THROW

ABBREVIATION LIST

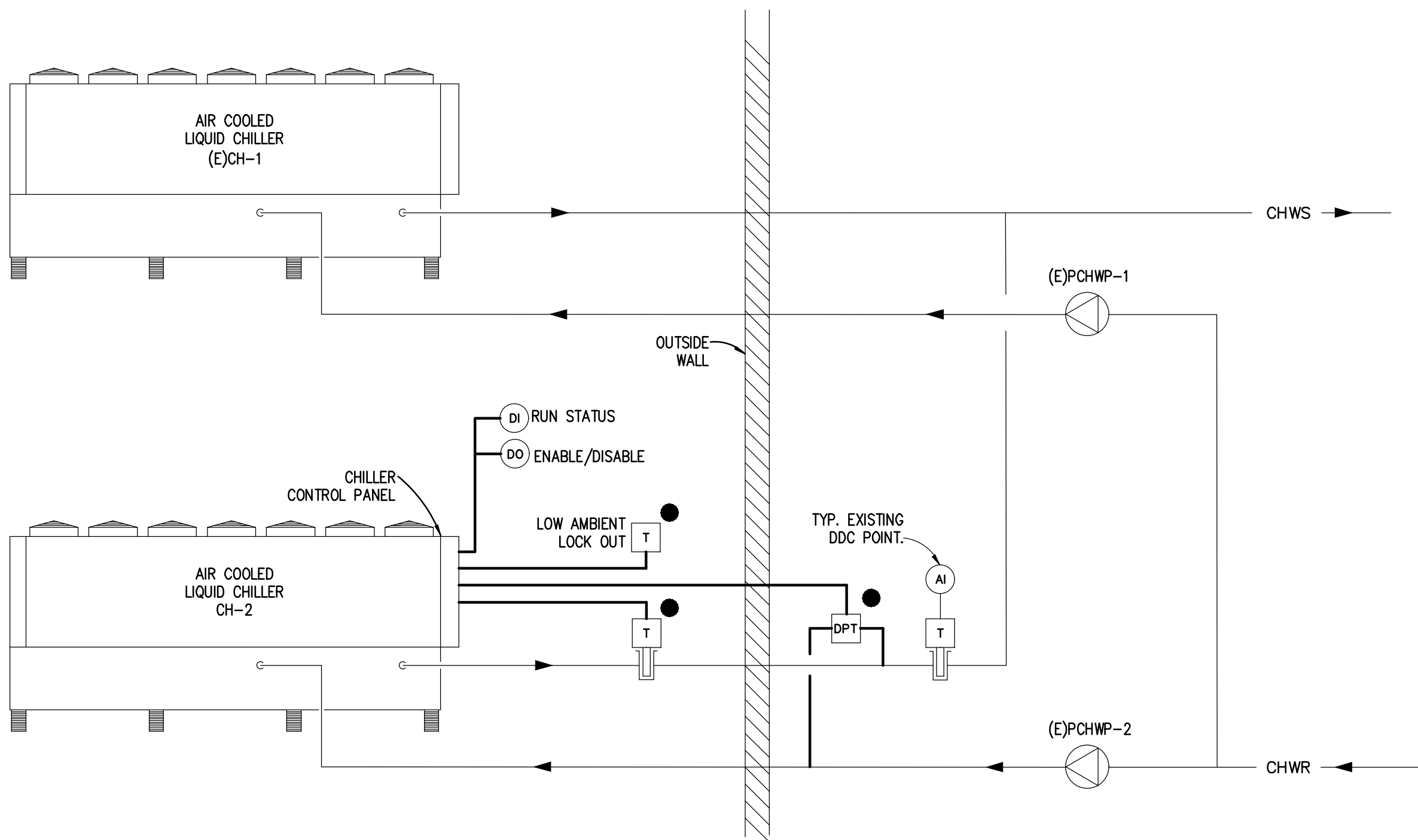
ABBREVIATION	DESCRIPTION
AAV	AUTOMATIC AIR VENT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
AMP	AMPERE
APD	AIR PRESSURE DROP
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR-CONDITIONING ENGINEERS
AUX	AUXILIARY
BAS	BUILDING AUTOMATION SYSTEM
C	COMMON
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWP	CHILLED WATER PUMP
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	COOLING
CLP	COMPUTER LOOP PUMP
CLR	COMPUTER LOOP RETURN
CLS	COMPUTER LOOP SUPPLY
CO2	CARBON DIOXIDE
COND	CONDENSATE
CONT	CONTINUATION OR CONTINUED
CONTR	CONTRACTOR
CONV	CONVECTOR
COS	CENTRAL OPERATOR STATION
CP	CIRCULATING PUMP
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CW	DOMESTIC COLD WATER
CWP	CONDENSER WATER PUMP
CHWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DA	DISCHARGE AIR
DAT	DISCHARGE AIR TEMPERATURE
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREES
DMPR	DAMPER
D/N	DAY/NIGHT
DN	DOWN
DPR	DAMPER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EQUH	ELECTRIC CABINET UNIT HEATER
EDB	ENTERING DRY BULB
EFF	EXHAUST FAN
EFF	EFFICIENCY
EHC	ELECTRIC HEATING COIL
ELEC	ELECTRICAL

ABBREVIATION	DESCRIPTION
ERCP	ELECTRIC RADIANT CEILING PANEL
ERU	ENERGY RECOVERY UNIT
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWI	ENTERING WATER TEMPERATURE
EXH	EXHAUST
F	DEGREES FAHRENHEIT
F&B	FACE AND BYPASS DAMPER
FAS	FIRE ALARM SYSTEM
FCU	FAN COIL UNIT
FLR	FLOOR
FM	FLOW MEASURING DEVICE
FT	FEET
FTI	FINNED TUBE RADIATION
GPM	GALLONS PER MINUTE
GRH	GRAVITY RELIEF HOOD
HOA	HAND/OFF/AUTO
HP	HEAT PUMP
HP	HORSEPOWER
HPLP	HEAT PUMP LOOP PUMP
HPLR	HEAT PUMP LOOP RETURN
HPLS	HEAT PUMP LOOP SUPPLY
HTG	HEATING
HV	HEATING VENTILATING
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HWH	HOT WATER HEATING
HWHR	HOT WATER HEATING RETURN
HWS	HOT WATER HEATING SUPPLY
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
HX	HEAT EXCHANGER
IAQ	INDOOR AIR QUALITY
IN	INCHES
JC	JANITOR'S CLOSET
KW	KILOWATT
KWH	KILOWATT-HOUR
LBS/HR	POUNDS PER HOUR
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MMBH	MILLION BRITISH THERMAL UNITS PER HOUR
M/S	MOTOR STARTER
M/D	MOUNTED
MTR	MOTOR
MV	MANUAL AIR VENT
MZ	MULTI-ZONE

ABBREVIATION	DESCRIPTION
NC	NORMALLY CLOSED
NCTC	NORMALLY CLOSED TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NC	NOT IN CONTRACT
NFPA	NATIONAL FIRE PROTECTION AGENCY
NO	NORMALLY OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NIGHT	NIGHT SETBACK
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
PACU	PACKAGED AIR CONDITIONING UNIT
PD	PRESSURE DROP (FEET OF WATER)
PHR	PERIMETER HEAT RETURN
PHS	PERIMETER HEAT SUPPLY
PIN	PANEL
PPM	PARTS PER MILLION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
R	RETURN
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RCF	RADIANT CEILING PANEL
RELA	RELIEF AIR
REQD	REQUIRED
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RTU	ROOF TOP UNIT
SA	SUPPLY FAN
SF	STATIC PRESSURE
SP	START/STOP
S/S	STANDARD
STD	STEAM
STM	SINGLE-ZONE
SZ	SUMMER/WINTER
S/W	SWITCH
SW	TEMPERATURE CONTROL
TC	TEMPERATURE CONTROL PANEL
TEMP	TEMPERATURE
UL	TERMINAL
THR	TERMINAL HEATING RETURN
THS	TERMINAL HEATING SUPPLY
TSP	TOTAL STATIC PRESSURE
TU	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UV	UNIT VENTILATOR
VAV	VARIABLE AIR VOLUME
VFC	VARIABLE FREQUENCY CONTROLLER
VUV	VERTICAL UNIT VENTILATOR
VS	VELOCITY SENSOR (AIRFLOW)
WC	WATER COLUMN
XFMR	TRANSFORMER

TC GENERAL NOTES

- THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TEMPERATURE CONTROL (TC) DRAWINGS.
- "PROVIDE" IS DEFINED AS "FURNISH AND INSTALL".
- TEMPERATURE CONTROLS CONTRACTOR (TC CONTRACTOR) SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
- FOR TEMPERATURE CONTROL DRAWINGS ONLY: ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE PROVIDED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT SHALL BE PROVIDED BY OTHER TRADES.
- ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION.
- TO CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
- ALL TC PROVIDED COMPONENTS AND ALL TC CONTRACTOR INSTALLED WIRING SHALL BE LABELED PER SPECIFICATIONS.
- ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
- ALL CONTROLS AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VEC AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION POINTS.
- ALL CONTROLS AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
- ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
- TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
- TO CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
- TC CONTRACTOR SHALL REUSE CONTROL AND AUXILIARY PANELS.
- TC CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED "SHIPPED LOOSE" PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS WHERE INDICATED. ALL REQUIRED 24V AND 120V FIELD WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TO CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.



CHILLED WATER SYSTEM CONTROL

- NOTE:
- DESIGNATES CHILLED WATER SYSTEM CONTROL DEVICE FURNISHED BY CHILLER MANUFACTURER AND WIRED BY TEMPERATURE CONTROLS CONTRACTOR.
 - TO CONTRACTOR SHALL REMOVE ALL CONTROLS WIRING FROM (E)CH-2 (TO BE DEMOLISHED) BACK TO THE POINT OF DDC CONNECTION.
 - REUSE GRAPHIC(S), ALARM REPORTS, AND TREND INFORMATION FOR THE REPLACEMENT CHILLER CH-2.

SEQUENCE OF OPERATION

- NOTE: ALL SETPOINTS, RESET SETPOINTS, TIME DELAYS, AND DEADBANDS DESCRIBED IN SEQUENCE SHALL BE ADJUSTABLE BY SYSTEM OPERATORS.
- (E)CONTROLLER FOR CH-2 SHALL USE THE SAME SEQUENCE OF OPERATION AS THE OLD CHILLER SO THAT CONTROL IS TRANSPARENT TO SYSTEM OPERATOR.
 - CH-2 SHALL START/STOP BASED ON EXISTING CONTROL LOGIC.
 - HARD-WIRED DDC POINTS FOR CH-2 SHALL PROVIDE ENABLE/DISABLE AND CHILLER RUN STATUS FOR GRAPHICAL DISPLAY.

ELECTRICAL SYMBOL LIST (NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
FX (NL)	LIGHTING TYPE (NL INDICATES NIGHT LIGHT)	TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION	CP	CONTROL PANEL	FC	SECURITY CAMERA
□	LIGHTING FIXTURE	TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER	MD	MOTOR	SD	SMOKE DETECTOR
▬	DIRECT/INDIRECT LIGHTING FIXTURE	TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL	VFC	VARIABLE FREQUENCY CONTROLLER	DD	DUCT SMOKE DETECTOR
⬮	EMERGENCY FIXTURE	TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP	MC	MANUAL CONTROLLER	CD	CARBON MONOXIDE DETECTOR
⬮	LIGHTING FIXTURE	TWCP	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP	KP	KEY PAD	RT	REMOTE TEST STATION (FOR DUCT DETECTOR)
⬮	LIGHTING FIXTURE	RGF	REMOTE GENERATOR ANNUNCIATOR PANEL	OR	CARD READER	TD	THERMAL DETECTOR
⬮	DIRECTIONAL LIGHTING FIXTURE	ATS	AUTOMATIC TRANSFER SWITCH	DB	DURESS PUSH BUTTON STATION	BD	PROJECTED BEAM DETECTOR
⬮	PENDANT LIGHTING FIXTURE	UPS	UNINTERRUPTIBLE POWER SUPPLY	DE	DELAYED EGRESS	FB	FIRE ALARM BELL
⬮	WALL SCONCE	CSX	LOW VOLTAGE CONTROL STATION *X* INDICATES TYPE	REX	REQUEST TO EXIT STATION	FX	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE
⬮	LIGHTING TRACK	Φ	SINGLE / DUPLEX RECEPTACLE OUTLET *X* INDICATES TYPE	PP	AUTOMATIC DOOR PUSH PAD OPERATOR	FX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE *XX* INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
⬮	TRACK LIGHTING FIXTURE	Φ	SINGLE/DUPLEX RECEPTACLE OUTLET CONTROLLED BY AUTOMATIC CONTROL DEVICE/SYSTEM	DD	DOOR OPERATOR	FX	FIRE ALARM COMBINATION VISUAL / AUDIBLE *XX* INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
⬮	POLE MOUNTED LIGHTING FIXTURE	Φ	QUAD RECEPTACLE OUTLET	DA	DOOR ACTUATOR	FX	FIRE ALARM COMBINATION VISUAL / AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED *XX* INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
⬮	POLE MOUNTED LIGHTING FIXTURE - POST TOP	Φ	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY AND GFCI RECEPTACLES)	AC	ACCESS CONTROL STATION	FX	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED *XX* INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
⬮	BOLLARD LIGHTING FIXTURE	Φ	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER	ACCP	ACCESS CONTROL CONTROL PANEL	FX	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
⬮	EMERGENCY LIGHTING UNIT	Φ	DEAD FRONT GROUND FAULT CIRCUIT INTERRUPTER	ACPS	ACCESS CONTROL POWER SUPPLY	FX	FIREFIGHTERS PHONE JACK
⬮	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)	Φ	DUPLEX EMERGENCY RECEPTACLE OUTLET			FX	FIRE ALARM CONTROL PANEL
⬮	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)	Φ	DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET			FX	FIRE ALARM ANNUNCIATOR PANEL
⬮	EXIT LIGHTING FIXTURE - WALL MOUNTED	Φ	QUAD TAMPER RESISTANT RECEPTACLE OUTLET			FX	NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
⬮	EXIT/EMERGENCY LIGHTING COMBO	Φ	ABOVE COUNTER DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET *X* INDICATES TYPE			FX	ADDRESSABLE MONITORING MODULE
BCELTS	BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH	Φ	DUPLEX UPS RECEPTACLE			FX	ADDRESSABLE CONTROL MODULE
ALCR	AUTOMATIC LOAD CONTROL RELAY	Φ	DUPLEX RECEPTACLE WITH 2 USB PORTS OUTLET			FX	TAMPER SWITCH
LC	LIGHTING CONTROL DEVICE - REFER TO LIGHTING CONTROL SCHEDULE	Φ	4 PORT USB CHARGING STATION			FX	FLOW SWITCH
XX	ROOM CONTROL DESIGNATION - REFER TO LIGHTING CONTROL SCHEDULE	Φ	CEILING MOUNTED DUPLEX/QUAD RECEPTACLE			FX	MAGNETIC DOOR RELEASE
S	SINGLE POLE TOGGLE SWITCH	Φ	POWER POLE				
S2	TWO POLE TOGGLE SWITCH	Φ	WALL/CEILING MOUNTED SPECIAL RECEPTACLE - REFER TO ELECTRICAL STANDARD SCHEDULES				
S3	3 WAY TOGGLE SWITCH	Φ	MULTI-OUTLET SURFACE RACEWAY				
S4	4 WAY TOGGLE SWITCH	Φ	MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET *X* INDICATES TYPE				
K	KEY OPERATED SWITCH	Φ	POKE-THROUGH ASSEMBLY *X* INDICATES TYPE				
K3	3 WAY KEY OPERATED SWITCH	Φ	FLOOR SERVICE FITTING *X* INDICATES TYPE				
K4	4 WAY KEY OPERATED SWITCH	Φ	ACCESS FLOOR SERVICE FITTING *X* INDICATES TYPE				
D	DIMMER SWITCH	Φ	CORD REEL *X* INDICATES TYPE				
D3	3 WAY DIMMER SWITCH	Φ	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES				
Do	DIMMER OCCUPANCY SENSOR SWITCH	Φ	3-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES				
D.	LOW VOLTAGE DIMMER SWITCH	Φ	4-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES				
SP	PILOT SWITCH	Φ	DIGITAL TIME SWITCH				
		Φ	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER-ILLUMINATED WHEN SWITCH IS IN "OFF" POSITION				
		Φ	LOW VOLTAGE SWITCH				
		Φ	OCCUPANCY SENSOR REFER TO ELECTRICAL STANDARD SCHEDULES				
		Φ	OCCUPANCY SENSOR				
		Φ	OCCUPANCY SENSOR *X* INDICATES TYPE				
		Φ	PTX				
		Φ	FBX				
		Φ	AFX				
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NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE												
OVERCURRENT DEVICE RATING (AMPERES)	COPPER CONDUCTORS						KEYED NOTES	ALUMINUM CONDUCTORS				
	WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE					WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE		
	PHASE & NEUTRAL	GROUND	SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G, 2PH, 1G)	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)		PHASE & NEUTRAL	GROUND	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)
15-20	12	12	3/4"	3/4"	3/4"	3/4"	NOT ACCEPTABLE					
25-30	10	10	3/4"	3/4"	3/4"	3/4"						
35-40	8	10	3/4"	3/4"	3/4"	3/4"						
45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"						1
60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	1" (1 1/4")						1
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"						
80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"						1
90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"						1
110	2 (1)	6	-	1 1/4"	1 1/4"	1 1/4" (1 1/2")						1
125	1 (1/0)	6	-	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"						1
150	1/0	6	-	1 1/2"	1 1/2"	1 1/2"	1					
175	2/0	6	-	2"	2"	2"	1					
200	3/0	6	-	2"	2"	2 1/2"	1					
225	4/0	4	-	2"	2"	2 1/2"	1					
250	250	4	-	2 1/2"	2 1/2"	2 1/2"	1					
300	350	4	-	2 1/2"	2 1/2"	3"	1					
350	500	3	-	3"	3"	3"	1					
400	500	3	-	3"	3"	3"	1					
450	2-4/0	2-2	-	2-2"	2-2"	2-2 1/2"	1					
500	2-250	2-2	-	2-2" 1/2"	2-2 1/2"	2-2 1/2"	1					
600	2-350	2-1	-	2-2" 1/2"	2-2 1/2"	2-3"	1					
700	2-500	2-1/0	-	2-3"	2-3"	2-3"	1					
800	2-500	2-1/0	-	2-3"	2-3"	2-3 1/2"	1					
1000	3-400	3-2/0	-	3-3"	3-3"	3-3"	1					
1200	3-600	3-3/0	-	3-3 1/2"	3-3 1/2"	3-3 1/2"	1					
1600	4-600	4-4/0	-	4-3 1/2"	4-3 1/2"	4-3 1/2"	1					
2000	5-600	5-250	-	5-3 1/2"	5-3 1/2"	5-3 1/2"	1					

GENERAL NOTES:
1. CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
3. COPPER CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. COPPER CONDUCTORS LARGER THAN #4/0 AND ALUMINUM CONDUCTORS ARE BASED ON XHHW-2.
4. CONDUIT SIZES ARE VALID FOR EMT OR RSC. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
5. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE REQUIRED WIRE SIZES TO ACCOMMODATE MECHANICAL EQUIPMENT LUG SIZES.
6. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.
7. OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY.
8. SPLICE FROM ALUMINUM TO COPPER PRIOR TO ENTERING EQUIPMENT LISTED FOR USE WITH COPPER CONDUCTORS ONLY OR USE COPPER CONDUCTORS FOR THE ENTIRE LENGTH OF FEEDER.

KEYED NOTES:
1. CONDUCTORS ARE BASED ON 90°C, 600V, INSULATED WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.

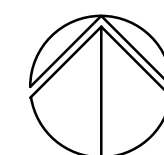
RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE													
		WIRE		RACEWAY							CABLE / CORD		
		COPPER TYPE THHN/THWN-2	COPPER TYPE XHHW-2	ELECTRICAL METALLIC TUBING (EMT)	INTERMEDIATE METAL CONDUIT (IMC)	RIGID STEEL CONDUIT (RSC)	PVC COATED RIGID STEEL CONDUIT	RIGID NON-METALLIC CONDUIT (RNC) TYPE EPC-40	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 40	FLEXIBLE METAL CONDUIT (FMC)	LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC)	SURFACE RACEWAY	CABLE TRAY
BRANCH CIRCUITS - EXTERIOR	EXPPOSED, SURFACE MOUNTED TO STRUCTURE	X		X	X	X							
	EXPPOSED, WITH FREESTANDING SUPPORT	X		X	X	X							
	CONCEALED IN RETAINING WALL OR SIMILAR ELEMENT	X		X	X	X							
	BELOW PARKING LOTS AND ROADWAYS	X		X	X	X		X					
	BELOW GREEN SPACE	X						X					
	WITHIN 5' OF FOUNDATION WALL	X			X	X							
	ROOFTOPS (WHEN APPROVED BY ENGINEER)	X		X	X	X							
BRANCH CIRCUITS - INTERIOR	CONCEALED, ACCESSIBLE CEILINGS	X		X	X								X
	CONCEALED, INACCESSIBLE CEILINGS	X		X	X								
	CONCEALED IN GYPSUM BOARD PARTITION WALLS	X		X	X				X				X
	CONCEALED IN CMU WALLS	X		X	X								
	EXPPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE	X		X	X	X							
	EXPPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE	X		X	X						X		
	EXPPOSED, ABOVE 10' AFF UNFINISHED SPACES	X		X	X	X							
SPECIAL APPLICATIONS	EXPPOSED, FINISHED SPACES	X									X		
	BELOW SLAB ON GRADE	X					X						
	EMBEDDED IN ELEVATED CONCRETE SLAB	X					X						
	DAMP AND WET LOCATIONS	X		X	X	X	X		X				
	CONNECTION BETWEEN VFC AND MOTORS (KEYED NOTE 1)												X
	CLASS 1 CONTROL CIRCUITS	X		X	X	X							X
	CLASS 2 CONTROL CIRCUITS	X		X	X	X							X
SPECIAL APPLICATIONS	CLASS 3 CONTROL CIRCUITS	X		X	X	X						X	X

GENERAL NOTES:
1. TRANSITION FROM PVC/HDPE AND PROVIDE RIGID STEEL OR RTRC SWEEPS WHERE CONDUITS PENETRATE WALLS, CONCRETE SLABS, CONCRETE BASES, AND ASPHALT.
2. REFER TO SPECIFICATIONS FOR RESTRICTIONS ON MC/AC CABLE INSTALLATION.
3. EMT SHALL NOT BE USED ON THE EXTERIOR OF A BUILDING OR IN AREAS SUBJECT TO DAMAGE BELOW 10' AFF.
4. INSTALL SURFACE RACEWAYS ONLY WHERE INDICATED ON DRAWINGS.

KEYED NOTES:
1. NON-ARMORED CABLE SHALL BE INSTALLED IN RACEWAY. ARMORED CABLE SHALL BE INSTALLED IN TRAY OR FREE-AIR AS APPLICABLE.

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS						
BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET)				
		120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	256	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

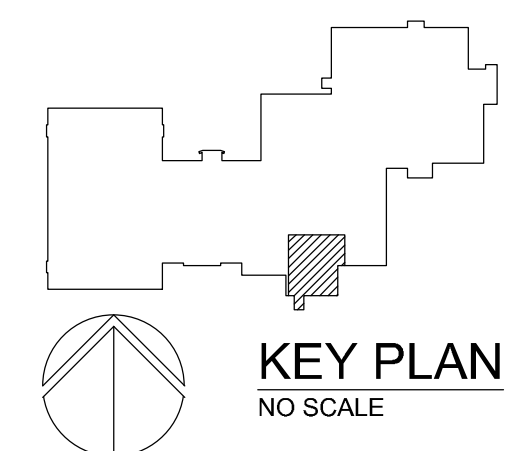
GENERAL NOTES:
1. THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9.
2. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS, WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
3. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 3 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT.
4. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE 90.1 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.



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

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
3. REMOVE EQUIPMENT OR MATERIALS AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COMPONENTS SHOWN.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXISTING DEMOLITION WORK.
5. PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CIRCUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
6. REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
7. MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.
8. DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
9. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
10. RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
11. PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
12. VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.
13. COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE OWNER'S REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER, WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER 72 HOURS PRIOR TO SHUT DOWN.

A. CHILLER AND CHILLER CONTROL PANEL BEING REPLACED. MAINTAIN BRANCH CIRCUIT FOR REUSE.



KEY PLAN
NO SCALE

SPRING LAKE PUBLIC SCHOOLS
SPRING LAKE HIGH SCHOOL
CHILLER REPLACEMENT

16140 148th Ave, Spring Lake, MI 49456

PARTIAL ELECTRICAL DEMOLITION PLAN

SUE
ONSTRUCTION
OCUMENTS

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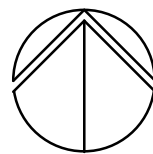
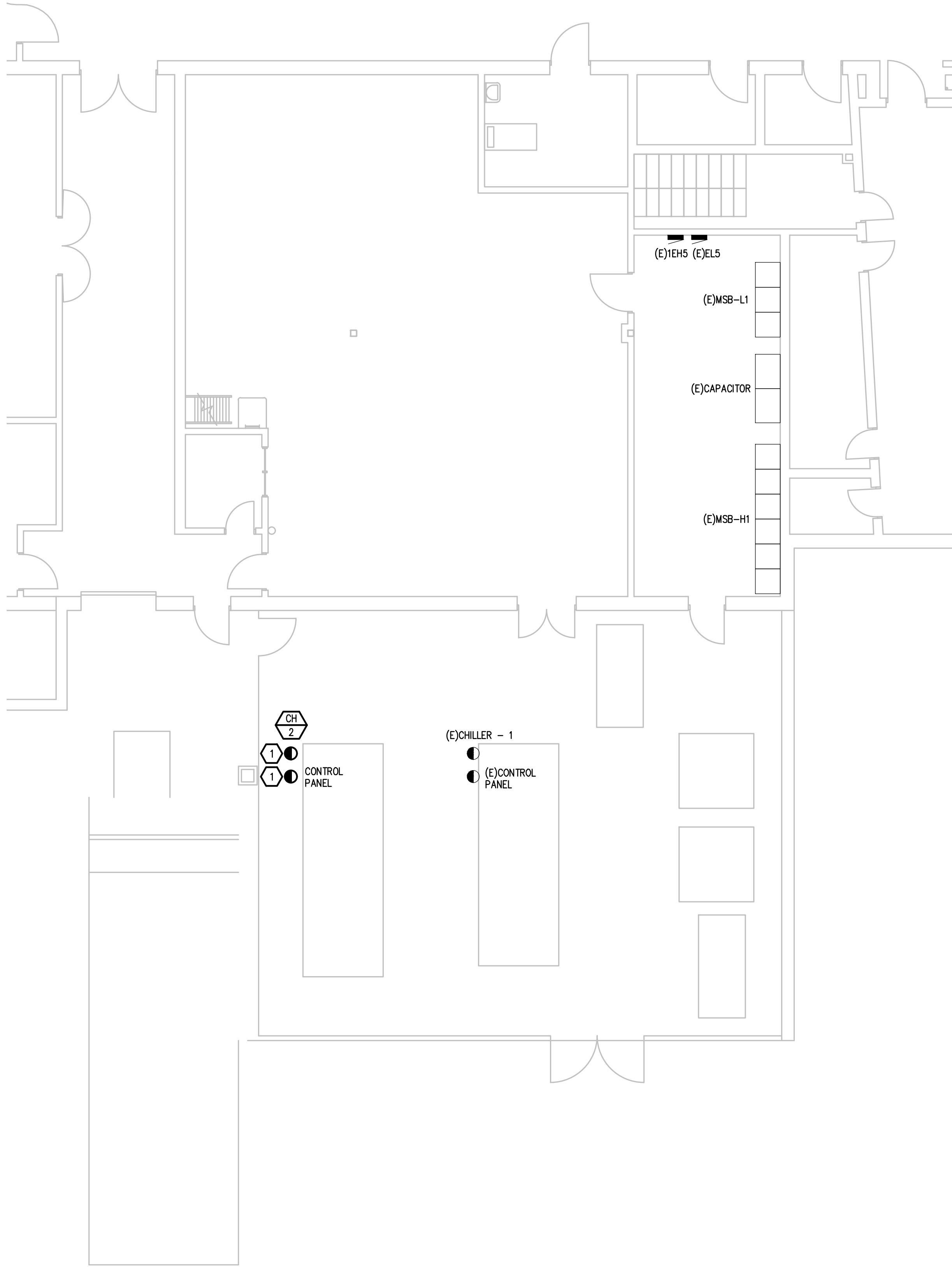
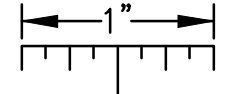


Peter Basso Associates Inc
CONSULTING ENGINEERS

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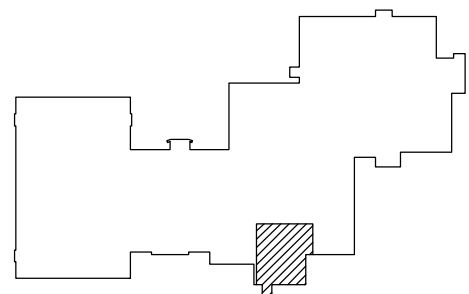
PARTIAL POWER NEW WORK PLAN
SCALE: 1/8" = 1' - 0"

ELECTRICAL GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
7. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
8. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.

CONSTRUCTION KEY NOTES:

1. CIRCUIT REPLACEMENT CHILLER AND CHILLER CONTROL PANEL TO MAINTAINED BRANCH CIRCUIT. EXTEND CONDUIT AND WIRE AS REQUIRED.



KEY PLAN
NO SCALE

PROJECT TITLE

SPRING LAKE PUBLIC SCHOOLS
SPRING LAKE HIGH SCHOOL
CHILLER REPLACEMENT

16140 148th Ave, Spring Lake, MI 49456

SHEET TITLE

PARTIAL POWER NEW WORK
PLAN

DATE

03/30/2023

ISSUE

CONSTRUCTION
DOCUMENTS

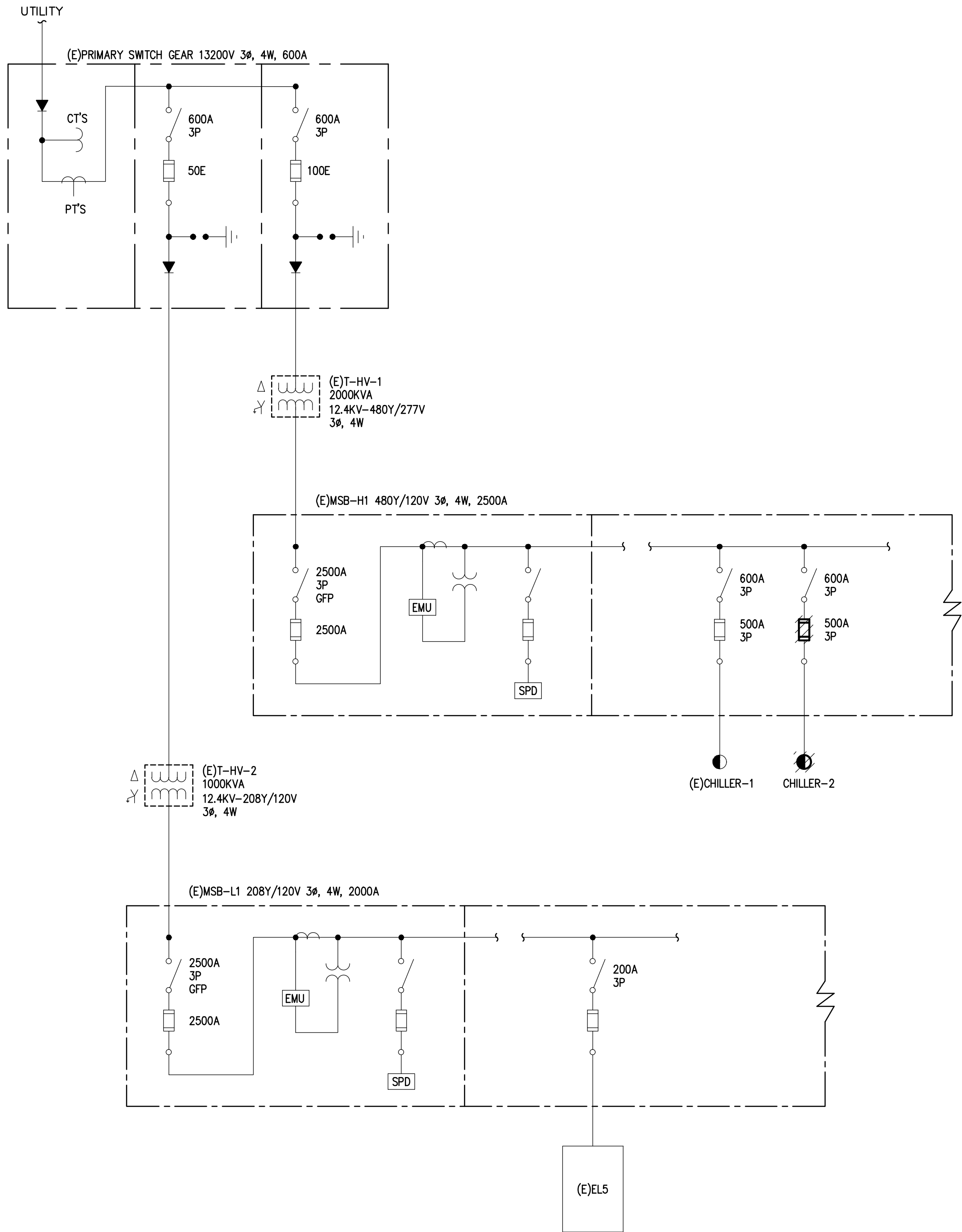
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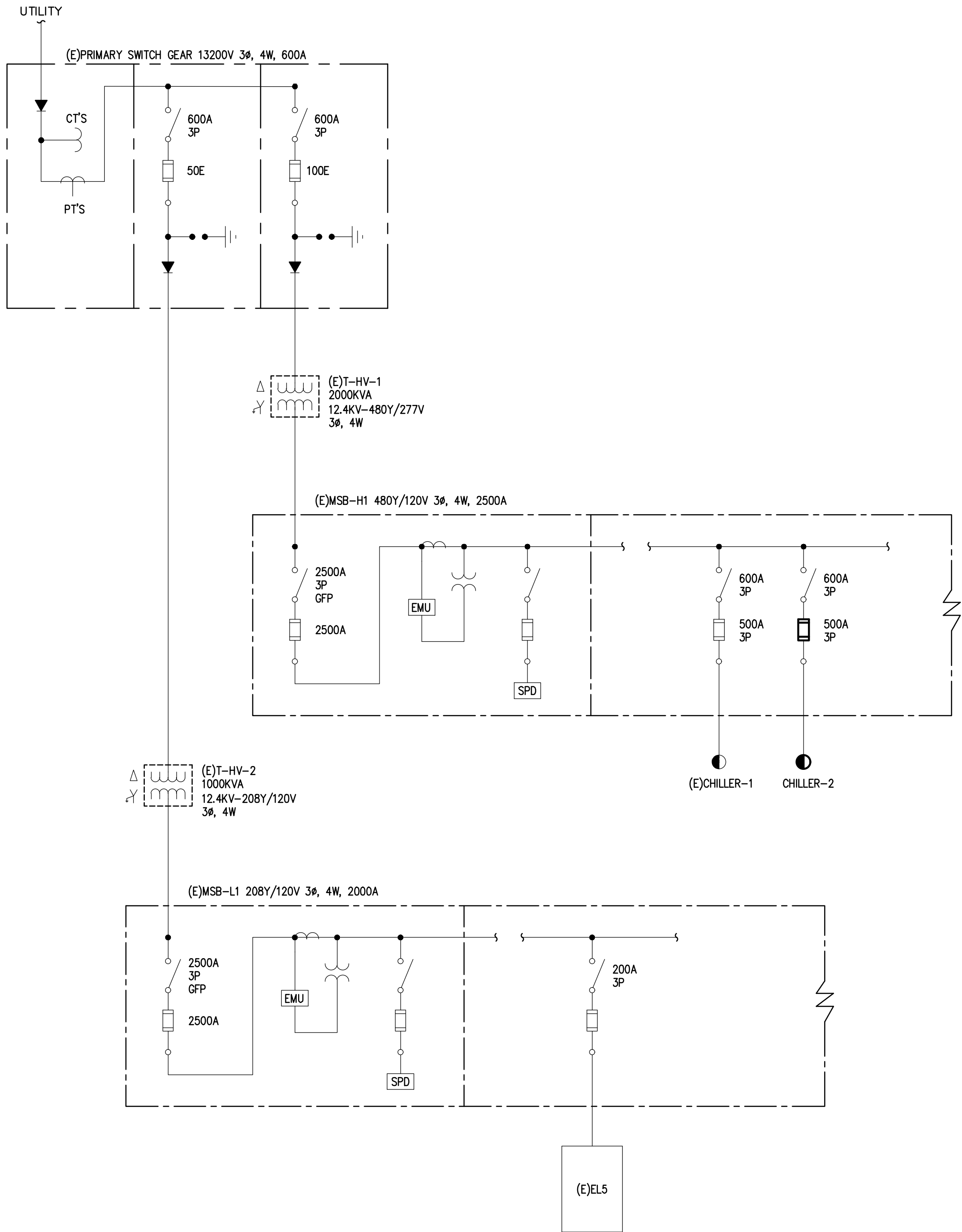
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www.peterbassoassociates.com
PEA-Project No. 2230004

Peter Basso Associates Inc
CONSULTING ENGINEERS



PARTIAL - DEMOLITION ONE LINE DIAGRAM
NO SCALE



PARTIAL - NEW WORK ONE LINE DIAGRAM
NO SCALE

MSB TOTAL CONNECTED LOAD CALCULATION

MSB METERED LOAD 1252 (1.25)	1565 KVA
REMOVED LOAD	
CHILLER-2	10 KVA
TOTAL CONNECTED LOAD	1555 KVA