HML CHILLER REPLACEMENT

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OWNER ADDRESS

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14 S CHURCH ST
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ELECTRICAL	MECHANICAL	ARCHITECTURAL
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PROJECT TITLE
HML CHILLER REPLACEMENT

OWNER
CITY OF ZEELAND

SITE ADDRESS
14 S CHURCH ST
ZEELAND, MI

SHEET TITLE
COVER SHEET

DATE
OCTOBER 23, 2026

SHEET NUMBER
G 001

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26-222.000

ALL SHEETS INTENDED FOR COLOR PLOT. VERIFY BLACK-AND-WHITE PLOT FOR INFORMATION INTEGRITY

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ABBREVIATIONS

A.C.D.	AUTOMATIC CONTROL DAMPER
A.F.F.	ABOVE FINISHED FLOOR
A.G.	ABOVE GRADE
A.P.D.	AIR PRESSURE DROP
B.D.	BALANCING DAMPER
B.D.D.	BACKDRAFT DAMPER
B.F.	BARRIER FREE
BTUH	BRITISH THERMAL UNIT PER HOUR
B.V.	BALANCING VALVE
C.B.	CATCH BASIN
C.B.V.	CALIBRATED BALANCING VALVE
C.F.H.	CUBIC FEET PER HOUR
C.F.M.	CUBIC FEET PER MINUTE
C.H.	CABINET HEATER
C.I.	CAST IRON
C.M.	CEILING MOUNTED
C.O.	CLEAN OUT
C.V.	CONTROL VALVE
C.W.	COLD WATER (DOMESTIC)
D.F.	DRINKING FOUNTAIN
DN.	DOWN
D.S.	DOWN SPOUT
E.A.	EXHAUST AIR
E.A.T.	ENTERING AIR TEMPERATURE
E.D.B.	ENTERING DRY BULB
E.F.	EXHAUST FAN
E.S.P.	EXTERNAL STATIC PRESSURE
E.W.B.	ENTERING WET BULB
E.W.C.	ELECTRIC WATER COOLER
E.W.T.	ENTERING WATER TEMPERATURE
EXIST.	EXISTING
E.T.R.	EXISTING TO REMAIN
F.C.	FLEXIBLE CONNECTION
F.D.	FLOOR DRAIN
(FD)	FIRE DAMPER
F.H.C.	FIRE HOSE CABINET
F.I.	FIELD INSTALLED
F.M.	FLOOR MOUNTED
F.P.M.	FEET PER MINUTE
F.R.	FIN RADIATION
G.P.M.	GALLONS PER MINUTE
H.B.	HOSE BIBB
HP	HORSE POWER
H.W.	HOT WATER SUPPLY (DOMESTIC)
H.W.R.	HOT WATER RETURN (DOMESTIC)
I.E.	INVERT ELEVATION
L.A.T.	LEAVING AIR TEMPERATURE
LAV.	LAVATORY
L.D.B.	LEAVING DRY BULB
LOUV.	LOUVER
L.W.B	LEAVING WET BULB
L.W.T.	LEAVING WATER TEMPERATURE
M.A.	MIXED AIR
M.A.T.	MIXED AIR TEMPERATURE
MAX.	MAXIMUM
M.B.	MOP BASIN
MBH	BRITISH THERMAL UNIT PER HOUR (THOUSANDS)
MFR.(S)	MANUFACTURER(S)
M.H.	MANHOLE
MIN.	MINIMUM
MTG.	MOUNTING
M.V.	MANUAL AIR VENT
N.C.	NORMALLY CLOSED
N.F.W.H.	NON-FREEZE WALL HYDRANT
N.I.C.	NOT IN CONTRACT
N.O.	NORMALLY OPEN
O.A.	OUTSIDE AIR
O.A.I.	OUTSIDE AIR INTAKE
OCT.	OCTAVE
P.A.	PIPE ANCHOR
P.D.	PRESSURE DROP
P.I.V	POST INDICATOR VALVE
P.R.V.	PRESSURE REDUCING VALVE
P.T.	PRESSURE / TEMPERATURE TAPPING
R.A.	RETURN AIR
R.D.	ROOF DRAIN
R.H.	RELATIVE HUMIDITY
R.I.O.	ROUGH IN ONLY
R.P.M.	REVOLUTIONS PER MINUTE
RPPBP	REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTER
R.V.	RELIEF VALVE
S.A.	SUPPLY AIR
S.C.W.	SOFT COLD WATER (DOMESTIC)
SENS.	SENSIBLE
SHR.	SHOWER
SK.	SINK
S.O.V.	SHUT-OFF VALVE
S.P.	STATIC PRESSURE
S.SK.	SERVICE SINK
TEMP.	TEMPERATURE
TOT.	TOTAL
T.R.	TEMPERATURE RISE
T.S.	TIP SPEED
T.S.P.	TOTAL STATIC PRESSURE
T.U.	TERMINAL UNIT BOX
T.W.C.	TEPID WATER CONNECTION
U.H.	UNIT HEATER
URN.	URINAL
V.	VENT
VEL.	VELOCITY
V.I.	VIBRATION ISOLATORS
V.I.F.	VERIFY IN FIELD
V.S.	VENT STACK
V.T.R.	VENT THRU ROOF
W.	WASTE
W.C.	WATER CLOSET
W.M.	WALL MOUNTED
W.P.D.	WATER PRESSURE DROP
W.SK.	WASH SINK

CONTROL SYMBOLS

- CONTROL VALVE
- FLOW METER (PROBE TYPE)
- THREE-WAY CONTROL VALVE
- F — FREEZE STAT
- M — MOTORIZED ACTUATOR
- HS — HUMIDITY SENSOR
- TS — TEMPERATURE SENSOR
- CO2 — CARBON DIOXIDE SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- AS — AIRFLOW SENSOR
- MS — MOISTURE SENSOR
- DS — DUCT SMOKE SENSOR

MECHANICAL SYMBOLS

- AW — ACID WASTE
- AWV — ACID WASTE VENT
- BALANCING VALVE
- BUTTERFLY VALVE
- CALIBRATED BALANCING VALVE
- CAP
- CO2 — CARBON DIOXIDE
- CHECK VALVE
- CR — CHILLER RETURN
- CS — CHILLER SUPPLY
- CWR — CHILLED WATER RETURN
- CWS — CHILLED WATER SUPPLY
- COLD WATER (DOMESTIC)
- A — COMPRESSED AIR
- COND — CONDENSATE
- CD — CONDENSATE DRAIN
- CONTROL VALVE
- CTR — COOLING TOWER RETURN
- CTS — COOLING TOWER SUPPLY
- DI — DEIONIZED WATER
- FIRE DAMPER (HORIZONTAL)
- FIRE DAMPER (VERTICAL)
- FIRE/SMOKE DAMPER
- FP — FIRE PROTECTION
- FLOW METER (PROBE TYPE)
- FLOW METER (WAFER TYPE)
- FS — FLOW SWITCH
- FD — FOOTING DRAIN
- FOR — FUEL OIL RETURN
- FOS — FUEL OIL SUPPLY
- G — GAS
- GAS COCK
- GLR — GROUND LOOP WATER RETURN
- GLS — GROUND LOOP WATER SUPPLY
- HR — HEATING HOT WATER RETURN
- HS — HEATING HOT WATER SUPPLY
- HPR — HEAT PUMP RETURN
- HPS — HEAT PUMP SUPPLY
- HOT WATER RETURN (DOMESTIC)
- HOT WATER SUPPLY (DOMESTIC)
- H — HUMIDISTAT
- MA — MEDICAL AIR
- MVAC — MEDICAL VACUUM
- N — NITROGEN
- N2O — NITROUS OXIDE
- OUTSIDE STEM AND YOKE VALVE
- O2 — OXYGEN
- PRESSURE GAUGE
- PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE
- PRESSURE / TEMPERATURE TAPPING
- PHR — PRIMARY HEATING HOT WATER RETURN
- PHS — PRIMARY HEATING HOT WATER SUPPLY
- PC — PUMPED CONDENSATE
- REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
- RL — REFRIGERANT LINE (LIQUID)
- RS — REFRIGERANT LINE (SUCTION)
- SAN — SANITARY SEWER (ABOVE FLOOR)
- -SAN- — SANITARY SEWER (BELOW FLOOR)
- SHUT-OFF VALVE
- SMOKE DAMPER
- SCW — SOFT COLD WATER
- SPRING CHECK VALVE
- STM (#) — STEAM
- STEAM TRAP
- ST — STORM SEWER (ABOVE FLOOR)
- ST (OF) — STORM SEWER (OVERFLOW SYSTEM)
- ST — STORM (BELOW FLOOR)
- STRAINER
- SMR — SNOWMELT RETURN
- SMS — SNOWMELT SUPPLY
- TS — TEMPERATURE SENSOR
- TW — TEPID WATER
- TWR — TEPID WATER RETURN
- THERMOMETER
- T — THERMOSTAT
- THREE-WAY CONTROL VALVE
- THROTTLING VALVE
- TRIPLE DUTY VALVE (ANGLE)
- TRIPLE DUTY VALVE (STRAIGHT)
- UNION
- VAC — VACUUM
- VACUUM BREAKER
- V — VENT

DUCTWORK COLOR LEGEND

- LOWER PRESSURE SUPPLY AIR
- EXHAUST AIR
- RETURN AIR
- MEDIUM PRESSURE SUPPLY AIR
- OUTSIDE AIR

GENERAL NOTES - MECHANICAL - NEW CONSTRUCTION

1. DETAILS SHOWN ILLUSTRATE DESIGN INTENT, NOT ALL POSSIBLE CONDITIONS. DRAWINGS ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS.
2. WHERE A CONTRACTOR ELECTS TO PROVIDE PRODUCTS, MATERIALS, EQUIPMENT, AND METHODS OF CONSTRUCTION THAT DOES NOT MEET THE BASIS OF DESIGN REQUIREMENTS, THE CONTRACTOR MUST ADHERE TO THE FOLLOWING SUBSTITUTION REQUEST PROCEDURES:

   • SPECIFICATION '00 2600 – PROCUREMENT SUBSTITUTION PROCEDURES', FOR SUBSTITUTION REQUESTS PRIOR TO RECEIPT OF BIDS.

   • SPECIFICATION '01 2500 – SUBSTITUTION REQUESTS', FOR SUBSTITUTION REQUESTS FOLLOWING CONTRACT AWARD.
3. COORDINATE ALL NEW CONSTRUCTION WORK OR ACTIVITY WITH THAT WHICH IS REQUIRED BY OTHER TRADES OR INSTALLERS IN ORDER TO PROVIDE A COMPLETE SYSTEM INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
4. INSTALLER SHALL VERIFY ALL EXISTING JOBSITE CONDITIONS AND DIMENSIONS AND BE RESPONSIBLE FOR THE SAME. NOTIFY THE ENGINEER OF DISCREPANCIES PRIOR TO COMMENCING WORK.
5. FIRE SEAL ALL PENETRATIONS, SUCH AS PIPES, DUCTS, CONDUIT, ETC. THROUGH FIRE AND/OR SMOKE RATED ASSEMBLIES.
6. MECHANICAL INSTALLER IS RESPONSIBLE FOR PATCHING OF WALLS, CEILINGS, AND FLOORS WHERE FIXTURES, MECHANICAL EQUIPMENT, SHEET METAL, OR PIPING HAS BEEN REMOVED, RELOCATED, OR INSTALLED.
7. ALL PIPING AND DUCTWORK SHALL AVOID LOCATIONS DIRECTLY ABOVE ALL ELECTRICAL EQUIPMENT. COORDINATE WITH ELECTRICAL.
8. ALL LOW VOLTAGE CABLING SHALL BE RUN IN CONDUIT BETWEEN DEVICE AND CABLE TRAY OR TECHNOLOGY RACK. NO CABLING SHALL BE VISIBLE IN EXPOSED CEILING SPACES AND SHALL BE ROUTED IN CONDUIT THAT IS PAINTED TO MATCH SURFACE IT IS SUPPORTED FROM. CABLING THAT IS ROUTED ABOVE AN ACCESSIBLE CEILING SPACE CAN BE INDEPENDENTLY SUPPORTED WITH COMM HOOKS OR RINGS.
9. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH "ELECTRICAL DEVICES ALIGNMENT GUIDELINES" DETAIL ON SHEET G003.
10. WHERE SPACE PERMITS, ALL HYDRONIC BRANCH PIPING SHALL TAP OFF OF BOTTOM OR SIDE OF PIPING MAINS PER BRANCH PIPING TAKE-OFF PIPING DETAIL THIS SHEET. MANUAL AIR VENTS SHALL BE INSTALLED AT THE TOP OF ALL HYDRONIC SYSTEMS.
11. ALL EXISTING CLOSED SYSTEMS SHALL BE ISOLATED AND FLUSHED/CLEANED PRIOR TO CONNECTION TO NEW SYSTEMS.
12. ALL BRANCH PIPING SHALL BE FURNISHED WITH SHUT-OFF VALVES IN AN ACCESSIBLE LOCATION NEAR MAIN CONNECTION.
13. NEW EQUIPMENT IS NOT PERMITTED TO BE USED FOR TEMPORARY HEAT WITHOUT THE OWNER'S WRITTEN APPROVAL.
14. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING NEW AND EXISTING EQUIPMENT FROM DAMAGE.

GENERAL NOTES - MECHANICAL - DEMOLITION

1. ALL DUCTWORK, PIPING AND EQUIPMENT SHOWN DASHED SHALL BE REMOVED. PROTECT EXISTING WORK WHICH IS TO REMAIN IN PLACE FOR REUSE WITH TEMPORARY COVERS, SHORING, BRACING AND SUPPORTS. VERIFY LOCATIONS OF AND PROTECT EXISTING INTERIOR ELECTRICAL AND MECHANICAL UTILITIES AND SERVICES EXCEPT WHERE INDICATED OTHERWISE. ALL MATERIALS AND EQUIPMENT REMOVED AND NOT REUSED SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. THE OWNER RESERVES THE RIGHT TO KEEP ANY EQUIPMENT OR TO SALVAGE PARTS FROM ANY EQUIPMENT PRIOR TO BEING REMOVED FROM SITE. ALL MATERIALS AND EQUIPMENT REQUIRING REMOVAL AND RELOCATION FOR REUSE SHALL BE CAREFULLY REMOVED AND STORED TO PREVENT DAMAGE AND REINSTALLED AS THE WORK PROGRESSES.
2. CONTRACTOR SHALL PROTECT ALL WALLS, CEILINGS, FLOORS, LIGHTS AND OTHER FINISHED SURFACES NOT BEING DEMOED. IF DAMAGED, THE CONTRACTOR SHALL REPAIR TO MATCH EXISTING CONDITIONS.
3. MODIFICATIONS TO THE ROOFING SYSTEM FOR DEMOLITION OR INSTALLATION OF NEW EQUIPMENT SHALL BE DONE IN A MANNER TO MAINTAIN OWNER'S ROOFING WARRANTY.
4. FOR ALL EXISTING ROOF CURBS WHICH ARE NOT BEING REUSED AND ARE RECEIVING NEW ROOF CAPS, IF THE MAXIMUM DIMENSIONS OF THE CURB EXCEED 30" IN EITHER DIRECTION THEN PROVIDE AND INSTALL 1 1/2" x 1 1/2" x 1/4" SUPPORT ANGLES TO SPAN ACROSS TOP OF ROOF CURB OPENING BELOW ROOF CAP. SPACING BETWEEN ANGLES SHALL NOT EXCEED 24" ON CENTER.

NOTE:
NOT ALL SYMBOLS AND ABBREVIATIONS ARE APPLICABLE TO THE SCOPE OF WORK INDICATED ON SUBSEQUENT DRAWINGS. CONTRACTOR SHALL DETERMINE WHICH SYMBOLS AND ABBREVIATIONS ARE APPLICABLE TO THE SPECIFIC SCOPE OF WORK UPON REVIEWING THE PROJECT DRAWINGS AND SPECIFICATIONS.

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SHEET TITLE
MECHANICAL & PLUMBING GENERAL NOTES, ABBREVIATIONS, AND SYMBOLS

DATE
OCTOBER 23, 2026

SHEET NUMBER
MG 001

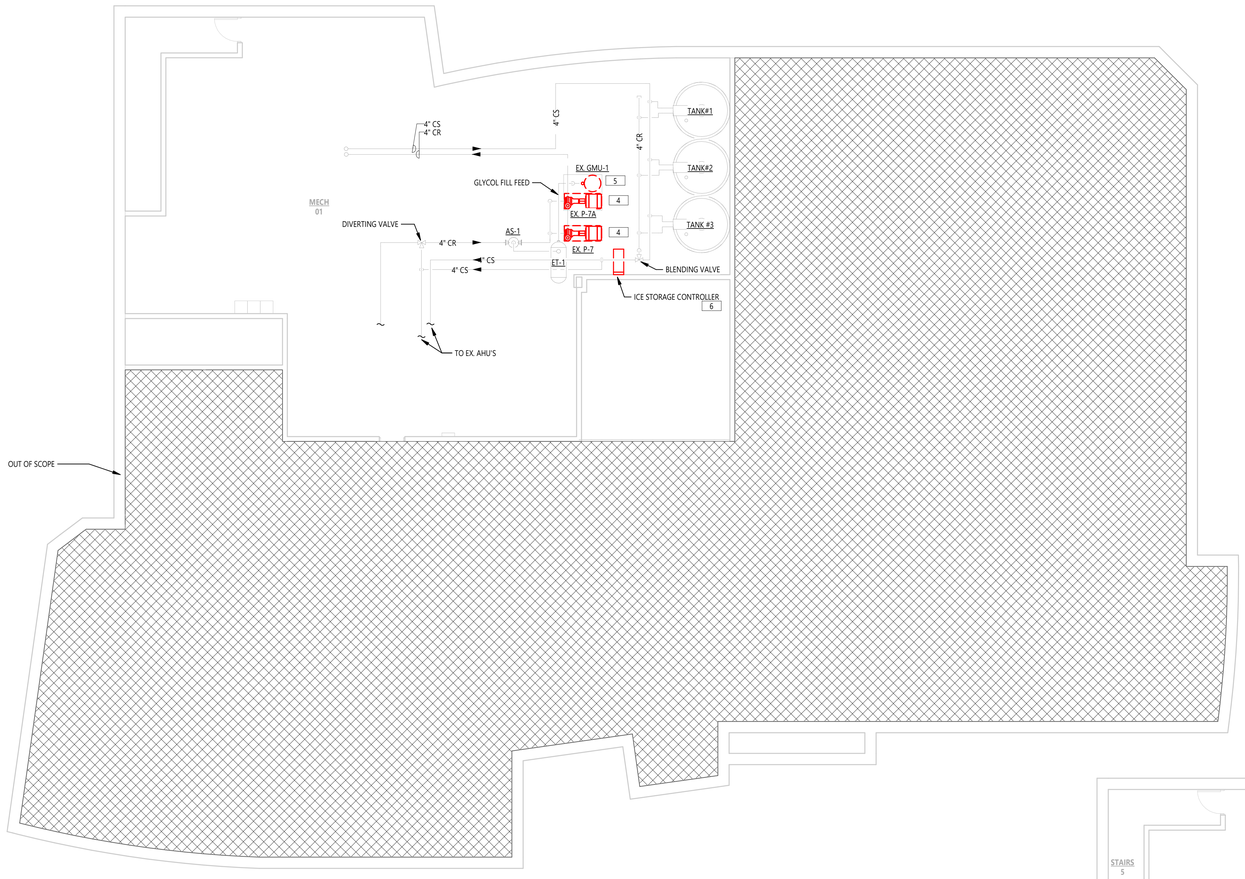
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ALL SHEETS INTENDED FOR COLOR PLOT. VERIFY BLACK-AND-WHITE PLOT FOR INFORMATION INTEGRITY

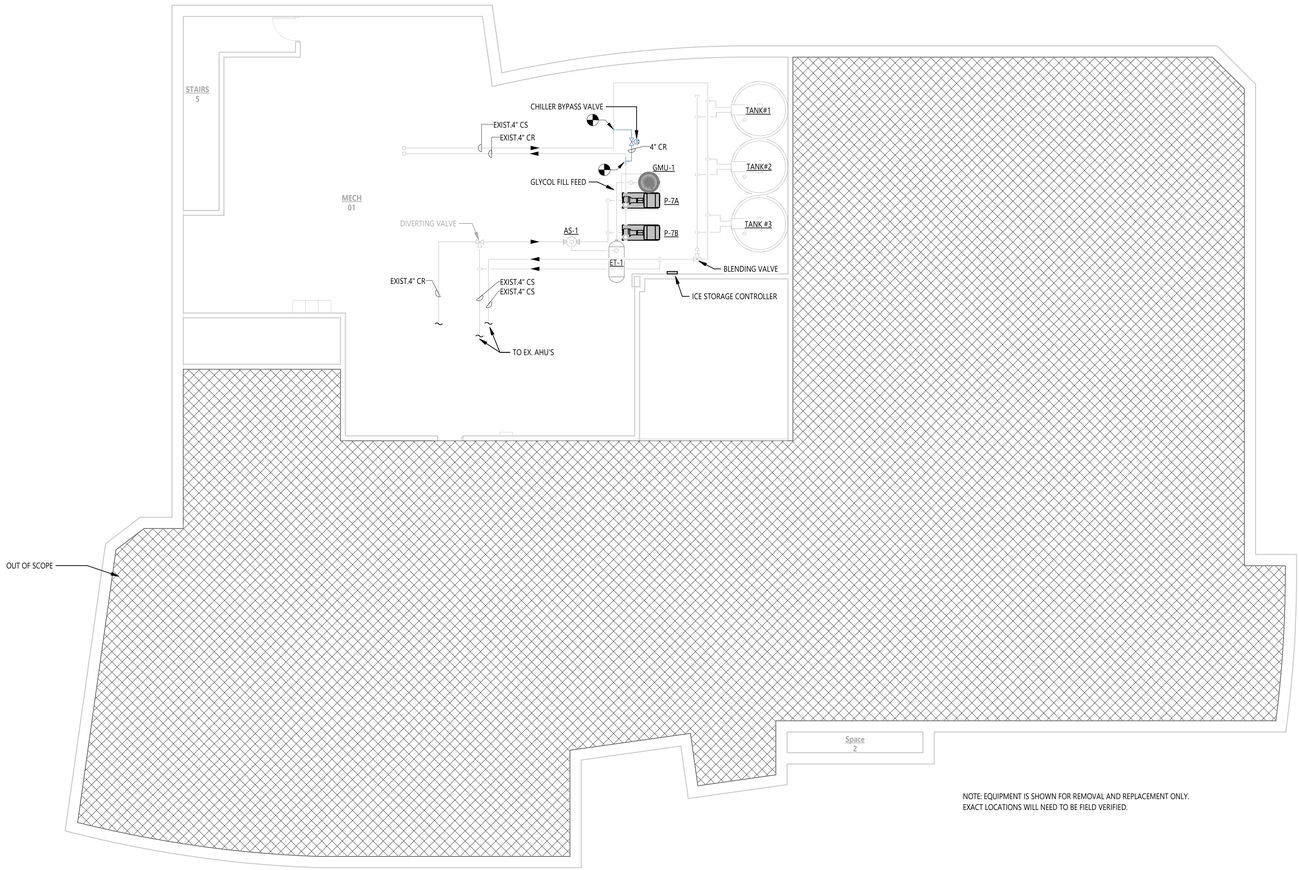
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KEYED NOTES - MECHANICAL - DEMOLITION

1 REMOVE 4" SUPPLY/RETURN BACK TO SHUT OFF VALVES.
2 REMOVE CHILLER. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CONNECTIONS.
3 REMOVE 4" BUTTERFLY VALVES ON SUPPLY AND RETURN SIDE. SHUT OFF CHILLED WATER FROM MECHANICAL ROOM TO ENSURE THAT SYSTEM DOESNT HAVE TO BE DRAINED.
4 REMOVE PUMPS BACK TO STOPS, REFER TO ELECTRICAL FOR CONNECTIONS
5 GYCOL MAKE UP UNIT SHALL BE REMOVED. REFER TO ELECTRICAL FOR CONNECTION.
6 ICE STORAGE SENSOR SHALL BE REMOVED. ELECTRICAL CONNECTIONS TO REMAIN.



LOWER FLOOR DEMOLITION PLAN
1/8" = 1'-0"



NOTE: EQUIPMENT IS SHOWN FOR REMOVAL AND REPLACEMENT ONLY.
EXACT LOCATIONS WILL NEED TO BE FIELD VERIFIED.

LOWER FLOOR
1/8" = 1'-0"

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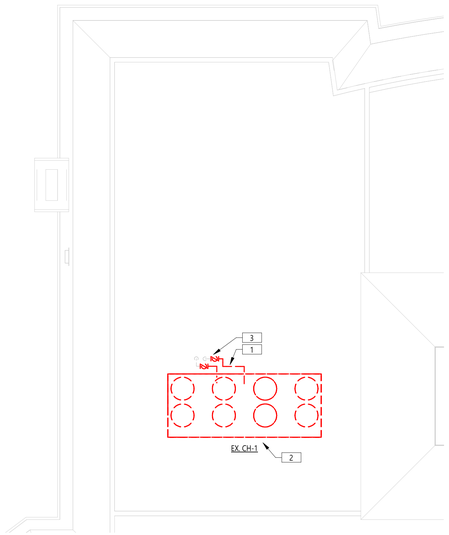
SHEET TITLE
LOWER FLOOR MECHANICAL PLAN

DATE
OCTOBER 23, 2026

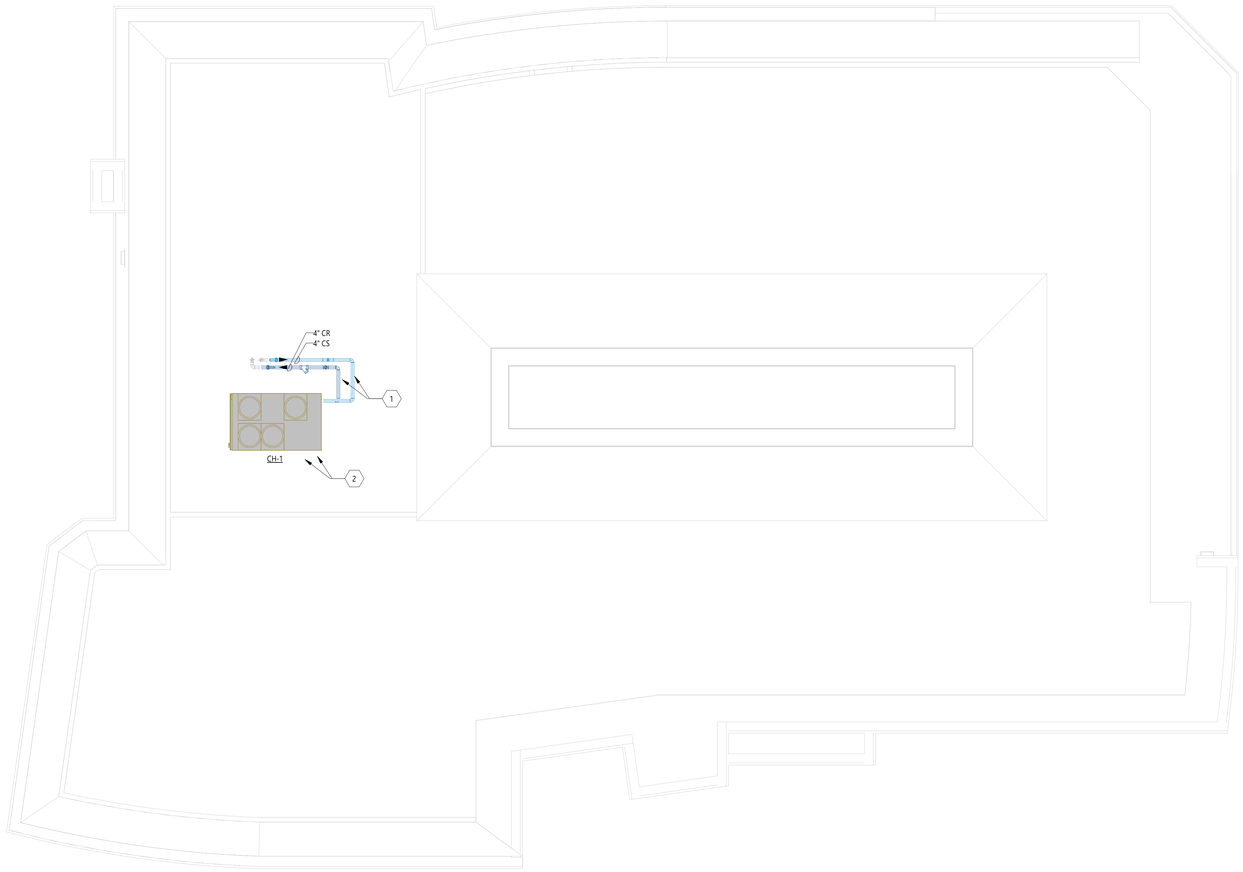
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2 M 102 PARTIAL ROOF DEMO PLAN
1/8" = 1'-0"



N ROOF MECHANICAL PLAN
1/8" = 1'-0"

KEYED NOTES - MECHANICAL - DEMOLITION

1. REMOVE 4" SUPPLY/RETURN BACK TO SHUT OFF VALVES.
2. REMOVE CHILLER. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL CONNECTIONS.
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4. REMOVE PUMPS BACK TO STOPS, REFER TO ELECTRICAL FOR CONNECTIONS
5. GYCOL MAKE UP UNIT SHALL BE REMOVED. REFER TO ELECTRICAL FOR CONNECTION.
6. ICE STORAGE SENSOR SHALL BE REMOVED. ELECTRICAL CONNECTIONS TO REMAIN.

KEYED NOTES - MECHANICAL - ROOF - CONSTRUCTION

1. PROVIDE 4" HYDRONIC SUPPLY AND RETURN TO NEW CHILLER. PIPE STANDS SHALL NOT PENETRATE ROOF MEMBRANE.
2. MODIFY EXISTING CHILLER STAND TO MOUNT NEW CHILLER.

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SHEET TITLE
ROOF MECHANICAL PLAN

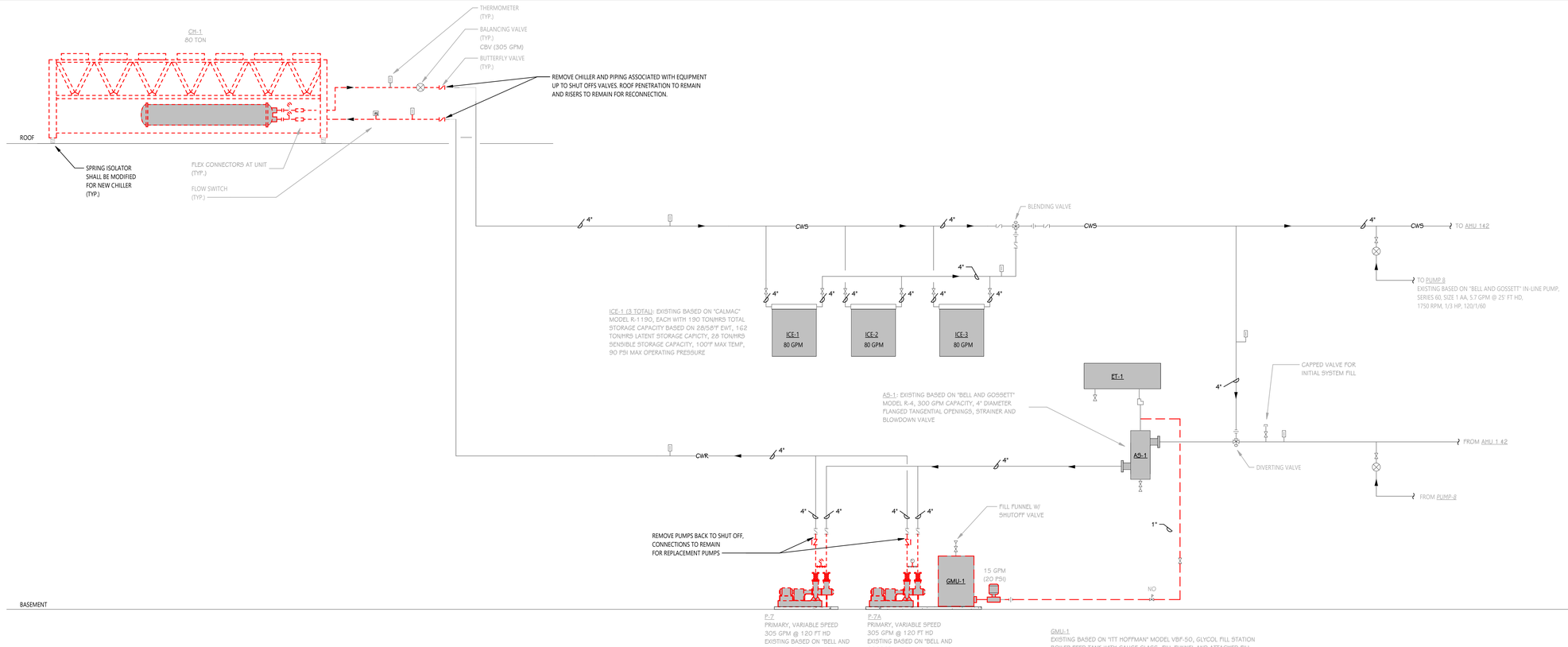
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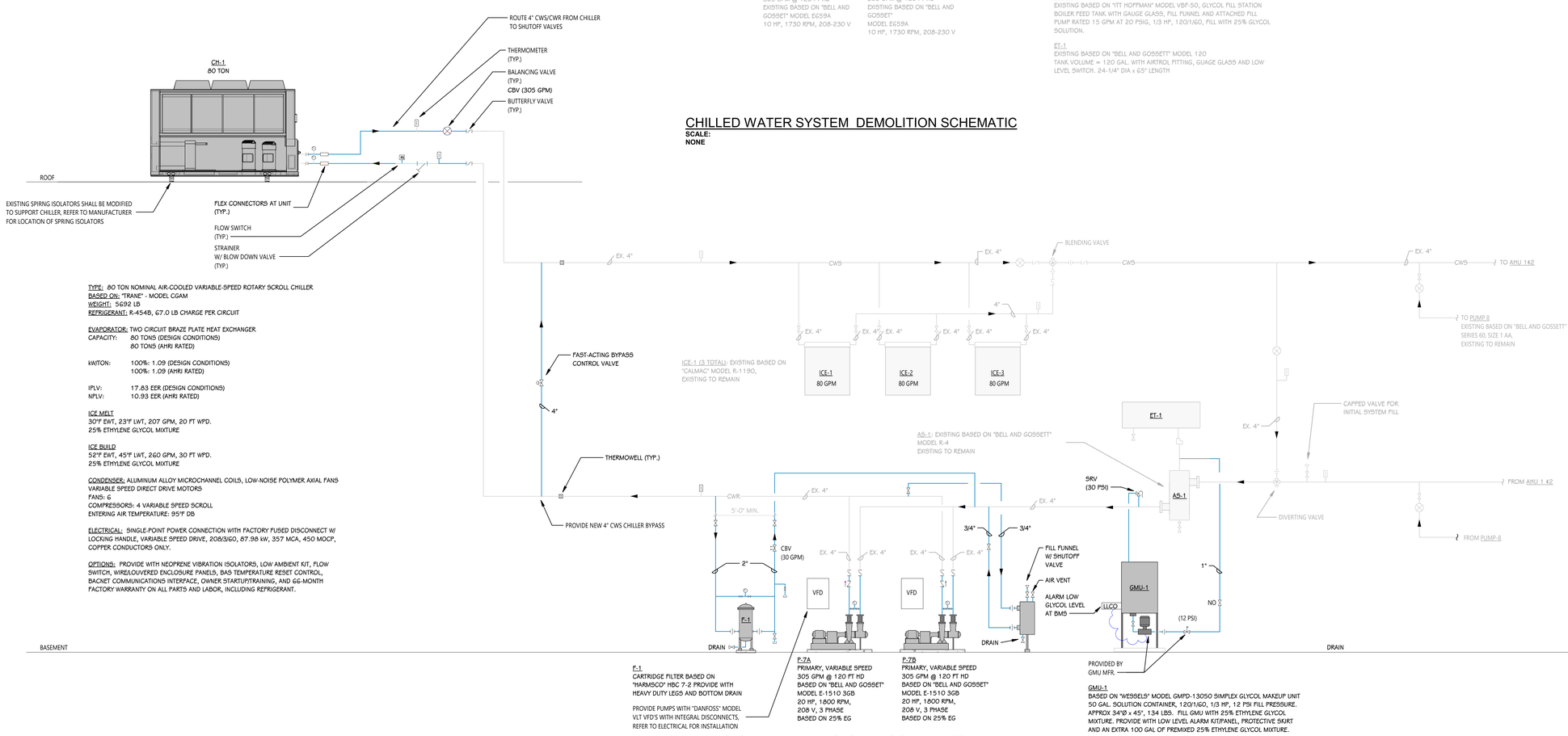
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CHILLED WATER SYSTEM DEMOLITION SCHEMATIC

SCALE:
NONE



CHILLED WATER SYSTEM SCHEMATIC

SCALE:
NONE

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SHEET TITLE
HVAC PIPING SCHEMATICS

DATE
OCTOBER 23, 2026

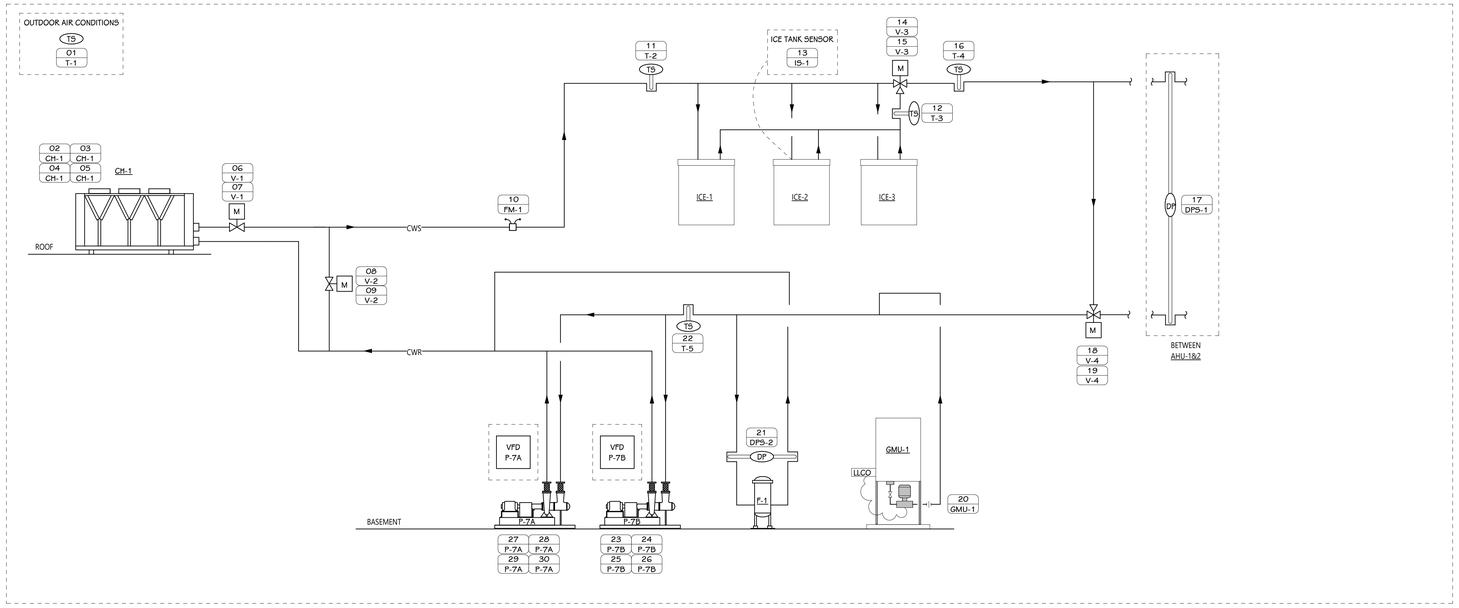
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M 401

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CONTROL POINTS

NUMBER	TAG	DESCRIPTION	ALARM	TREND	MISC.	REMARKS
CHILLED WATER SYSTEM (AIR COOLED)						
01	T-1	OUTDOOR AIR TEMPERATURE		■		GLOBAL
02	CH-1	ENABLE/DISABLE		■		
03	CH-1	CHILLED WATER TEMPERATURE SETPOINT		■		
04	CH-1	CHILLER STATUS		■		MODBUS/BACNET DATA (FIRE RATE/HOURS...)
05	CH-1	CHILLER ALARM	■	■		
06	V-1	ISOLATION VALVE POSITION		■		
07	V-1	ISOLATION VALVE OPEN/CLOSE		■		
08	V-2	BYPASS VALVE OPEN/CLOSED		■		
09	V-2	BYPASS VALV VALVE POSITION		■		
10	FM-1	COOLING LOOP FLOW RATE		■		
11	T-2	ENTERING CHILLED WATER SUPPLY TEMPERATURE		■		
12	T-3	ICE TANK STORAGE LEAVING WATER TEMPERATURE		■		
13	IS-1	ICE TANK SENSOR		■		
14	V-3	BLENDING VALVE OPEN/CLOSED		■		
15	V-3	BLENDING VALVE VALVE POSITION		■		
16	T-4	LEAVING CHILLED WATER SUPPLY TEMPERATURE		■		
17	DPS-1	DIFFERENTIAL PRESSURE SENSOR		■		
18	V-4	DIVERTING VALVE OPEN/CLOSED		■		
19	V-4	DIVERTING VALVE VALVE POSITION		■		
20	GMU-1	GYCOL MAKEUP UNIT LOW LEVEL ALARM	■	■		
21	DPS-2	DIFFERENTIAL PRESSURE FILTER STATUS		■		
22	T-5	CHILLED WATER RETURN TEMPERATURE		■		
23	P-7B	ENABLE/DISABLE		■		
24	P-7B	RUN STATUS		■		
25	P-7B	SPEED CONTROL		■		
26	P-7B	VFD FAULT STATUS	■	■		
27	P-7A	ENABLE/DISABLE		■		
28	P-7A	RUN STATUS		■		
29	P-7A	SPEED CONTROL		■		
30	P-7A	VFD FAULT STATUS	■	■		



CHILLED WATER SYSTEM CONTROLS DIAGRAM

SCALE: NONE

SEQUENCE OF OPERATIONS

NOTE: ALL LABOR, MATERIAL, EQUIPMENT AND SOFTWARE NOT SPECIFICALLY INDICATED WITHIN CONTROLS DRAWINGS THAT IS REQUIRED TO MEET THE FUNCTIONAL INTENT OF THE SEQUENCE OF OPERATIONS SHALL BE PROVIDED WITHOUT ADDITIONAL COST. POINT LISTS SHALL BE A GUIDE TO THE POINTS REQUIRED FOR CONTROL SYSTEM. FINAL POINTS SHALL BE DETERMINED BY SEQUENCE OF OPERATIONS. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS. ALL POINTS SHALL BE TRENDABLE.

COOLING PLANT SYSTEMS

1. SYSTEM GENERAL DESCRIPTION:
   1. THE COOLING PLANT CONTROL SYSTEM SHALL MONITOR AND CONTROL THE SYSTEM'S CHILLER, PUMP(S), AND CONTROL VALVES AS SHOWN ON THE COOLING PLANT FLOW DIAGRAM, IN THE COOLING PLANT POINTS LIST AND AS DETAILED IN THE SEQUENCE OF OPERATION LISTED BELOW.
   2. THE COOLING PLANT SYSTEM CONSISTS OF AN AIR-COOLED CHILLER WITH ITS PIPING CONFIGURATION ARRANGED AS A VARIABLE PRIMARY LOOP SUPPLYING CHILLED WATER TO THE FACILITY.
   3. THE COOLING SYSTEM INCLUDES ICE THERMAL STORAGE.
2. COOLING PLANT SYSTEM ENABLE/DISABLE:
   1. THE COOLING PLANT SYSTEM SHALL BE ENABLED/DISABLED BY THE COOLING PLANT CONTROLLER AS REQUESTED BY THE BUILDING AUTOMATION SYSTEM (BAS) OPERATOR INTERFACE PANEL OR THE BAS TIME OF DAY SCHEDULE. THE COOLING PLANT CONTROL SYSTEM WILL START AND STOP THE CHILLED WATER PUMPS AND CHILLERS BASED UPON SYSTEM LOAD.
   2. WHEN THE COOLING PLANT SYSTEM IS ENABLED, THE SYSTEM SHALL RESPOND TO A CHILLED WATER PUMP REQUEST FROM THE CHILLER. THE SYSTEM SHALL COMMAND THE ASSOCIATED CHILLED WATER ISOLATION VALVE OPEN AND ENABLE THE CHILLED WATER PUMP(S) TO START.
   3. THE COOLING PLANT IS DISABLED WHEN ALL CHILLERS ARE DISABLED AND THERE IS NOT AN ACTIVE CHILLED WATER PUMP REQUEST. WHEN THE PLANT IS DISABLED, THE CHILLED WATER PUMPS SHALL BE COMMANDED OFF AND THE CHILLER ISOLATION VALVES SHALL BE CLOSED.
3. CHILLER ISOLATION VALVES:
   1. CHILLER ISOLATION VALVES SHALL PREVENT THE FLOW OF FLUID THROUGH NON-OPERATING CHILLERS. WHEN THE SYSTEM RECEIVES A CHILLER WATER PUMP REQUEST FROM A CHILLER, THE CHILLER ISOLATION VALVE WILL BE CONTROLLED TO 100% OPEN. CHILLER ISOLATION VALVE STROKE TIME SHALL BE (60-120) SECONDS (ADJ.) TO REDUCE OPERATING CHILLER FLOW TRANSIENTS. WHEN THE VALVE IS CONFIRMED TO BE 100% OPEN THE SYSTEM WILL START THE CHILLED WATER PUMPS. IF THE CHILLER'S ISOLATION VALVE IS NOT CONFIRMED OPEN AFTER (VALVE STROKE TIME PLUS 60 SEC) 180 SECONDS (ADJ.), THE SYSTEM SHALL ANNUNCIATE A CHILLER ISOLATION VALVE FAILURE ALARM TO THE BAS OPERATOR INTERFACE.
4. SERIES ICE STORAGE DOWNSTREAM OF CHILLER - OPERATING MODES
   1. THE PURPOSE OF THE ICE THERMAL STORAGE OPERATION IS TO CARRY ALL OR PART OF THE FACILITIES COOLING LOAD WHEN POSSIBLE. SUFFICIENT ICE THERMAL STORAGE CAPACITY AND DURATION IS A FUNCTION OF THE THERMAL STORAGE DEVICE AND THE BUILDING LOAD. WHEN ICE THERMAL STORAGE IS USED IN THIS CONFIGURATION IT IS EXPECTED THAT THE CIRCULATING FLUID THROUGHOUT THE SYSTEM IS A GLYCOL MIXTURE.
5. THE ICE STORAGE AND CHILLER SHALL OPERATE UNDER FIVE SEPARATE MODES. ALL MODES SHALL RUN BASED ON SYSTEM CONTROLLER PREFERENCES WITH THE OPTION FOR A USER OVERRIDE TO FORCE THE SYSTEM INTO A MODE OR TO PROVIDE SCHEDULES FOR EACH MODE.
   A. THE ICE STORAGE / CHILLER OPERATION MODES ARE AS FOLLOWS:
      a. CHILLER ONLY COOLING
      b. ICE STORAGE ONLY COOLING
      c. SIMULTANEOUS CHILLER AND ICE COOLING
      d. ICE MAKING
      e. SYSTEM OFF (TANKS SECURED)
6. THERE ARE TWO CONTROL VALVES SPECIFICALLY RELATED TO THE SERIES ICE STORAGE MODE OF OPERATION.
   A. THE ICE STORAGE MIXING VALVE IS USED TO MAINTAIN TEMPERATURE AS THE TANKS DISCHARGE. THE ICE MODE VALVE WILL BE POSITIONED BASED ON THE MODE OF OPERATIONS LISTED BELOW. THESE VALVES WILL BE POSITIONED FOR TEMPERATURE AND MODE CONTROL AS DETAILED IN THE SEQUENCES OF EACH MODE LISTED BELOW.
7. CHILLER ONLY COOLING MODE:
   A. WHEN THE SYSTEM CONTROLLER DETERMINES THAT THIS MODE IS PREFERRED, THE CONTROL SYSTEM SHALL ENABLE CHILLER ONLY COOLING AND DISABLE THE ICE STORAGE COOLING.
   B. THE CHILLER MINIMUM FLOW BYPASS VALVE SHALL BE MODULATED TO MAINTAIN THE MINIMUM OPERATING FLOW THROUGH THE CHILLER EVAPORATOR.
   C. THE ICE STORAGE MIXING VALVE SHALL FULLY BYPASS THE THERMAL STORAGE TANKS, THE ICE STORAGE MODE VALVE SHALL OPEN TO THE BUILDING LOAD.
   D. THE CHILLER(S) SHALL BE ENABLED TO MAINTAIN THE CHILLED WATER SETPOINT, THE PUMPS SHALL OPERATE AS DESCRIBED IN THEIR RESPECTIVE PUMPING SEQUENCES OF THIS DOCUMENT.
8. ICE STORAGE ONLY COOLING MODE:
   A. WHEN THE SYSTEM CONTROLLER DETERMINES THAT THIS MODE IS PREFERRED, THE CONTROL SYSTEM SHALL ENABLE ICE STORAGE ONLY COOLING AND DISABLE THE CHILLER COOLING. WHEN ALL CHILLERS HAVE BEEN DISABLED AND THERE IS NOT AN ACTIVE CHILLED WATER PUMP REQUEST, THE CHILLER CHILLED WATER BYPASS VALVE WILL OPEN AND THE CHILLED WATER PUMP(S) WILL REMAIN RUNNING TO ALLOW FULL CHILLED WATER FLOW AROUND THE CHILLERS. THE ICE STORAGE MODE VALVE SHALL BE POSITIONED TO SUPPLY CHILLED WATER TO THE BUILDING AND THE ICE STORAGE MIXING CONTROL VALVE SHALL MODULATE TO SUPPLY 42 DEG. F (ADJ.) CHILLED WATER TO THE BUILDING LOAD.
   B. PROVIDE AN ADJUSTABLE INPUT FOR MINIMUM ICE LEVEL IF INDICATIONS ARE THAT ICE MAY REACH ADJUSTABLE MINIMUM ICE LEVEL PRIOR TO THE END OF THE ON-PEAK PERIOD AN ALARM SHALL BE GENERATED AND SIMULTANEOUS CHILLER COOLING AND ICE TANK COOLING SHALL BE ENABLED.
9. SIMULTANEOUS CHILLER & ICE COOLING MODE:
   A. WHEN THE SYSTEM CONTROLLER DETERMINES THAT THIS MODE IS PREFERRED, THE CONTROL SYSTEM SHALL ENABLE BOTH CHILLER AND ICE TANK DISCHARGE CONTROL, THE SYSTEM PUMP(S) SHALL BE ENABLED IF NOT ALREADY ENABLED, AND THE ICE STORAGE MIXING VALVE SHALL MODULATE TO MAINTAIN 42 DEG. F (ADJ.) TO THE BUILDING LOAD.
   B. THE COOLING PLANT CONTROL SYSTEM SHALL LIMIT THE CHILLER CAPACITY TO MEET THE DEMAND LIMIT STRATEGY.
   C. IF THE ICE TANK SUPPLY TEMPERATURE REACHES ITS HIGH LIMIT (45) DEG. F (ADJ.) FOR 5-MINUTES, THEN THE ICE MIXING VALVE SHALL BYPASS THE ICE STORAGE TANKS AND AN ALARM SHALL BE GENERATED AT THE BAS OPERATOR INTERFACE. THE PLANT SHALL TRANSITION INTO CHILLER ONLY COOLING MODE OF OPERATION.
   D. THE SYSTEM CONTROLLER SHALL MONITOR THE TARGET DISCHARGE RATE, THE CHILLER MINIMUM FLOW, THE CHILLER MINIMUM LOAD, AND THE BUILDING LOAD TO DETERMINE WHETHER TO STAY IN SIMULTANEOUS CHILLER AND ICE COOLING MODE OR TRANSITION TO EITHER CHILLER ONLY OR ICE ONLY COOLING MODES.
   E. CHILLED WATER PUMPS WILL BE CONTROLLED AS CALLED OUT IN THE PUMP SEQUENCES BELOW.
10. ICE MAKING MODE:
   A. WHEN ICE MAKING MODE IS SCHEDULED, AND WHEN TANK INVENTORY IS BELOW 90% (ADJ.) THE ICE STORAGE MODE VALVE SHALL BE POSITIONED TO BYPASS THE BUILDING LOAD AND PROVIDE FULL FLOW BACK TO THE TO THE CHILLERS. THE ICE MIXING VALVE SHALL MODULATE TO FULL FLOW THROUGH THE TANKS, THE PUMP(S) SHALL BE ENABLED IF NOT ALREADY ENABLED, THE VARIABLE SPEED DRIVE(S) SET TO ICE MAKING GPM, AND ONCE CHILLER FLOW IS PROVEN THE CHILLER SHALL BE ENABLED IN ITS ICE MAKING MODE. THE CHILLER SHALL OPERATE IN THE ICE MAKING MODE UNTIL THE ICE MAKING PERIOD EXPIRES OR THE RETURN TEMPERATURE FROM THE ICE TANK(S) DROPS BELOW 27 DEG. F (ADJ.) INDICATING THE TANKS ARE FULLY CHARGED. THERE SHALL BE A 5-MINUTE DELAY (ADJ.) BEFORE TRANSITIONING OUT OF THE ICE MAKING MODE.
   B. NOTE: WHEN TANK INVENTORY IS BELOW 5% AT THE BEGINNING OF THE ICE MAKING MODE, THE ICE TANK LEAVING TEMPERATURES MAY DROP BELOW 27 DEG. F WITHIN THE INITIAL FIRST 1- 2 HOURS OF ICE MAKING. TO AVOID PREMATURE FALSE TERMINATIONS THE SYSTEM SHALL IGNORE THESE LOW TEMPERATURE READINGS FOR THE FIRST 2-HOURS (ADJ.) OF ICE MAKING, WHEN STARTING WITH LOW ICE INVENTORY.
11. SIMULTANEOUS CHILLER & ICE COOLING MODE:
   A. WHEN THE SYSTEM CONTROLLER DETERMINES THAT THIS MODE IS PREFERRED, THE CONTROL SYSTEM SHALL ENABLE BOTH CHILLER AND ICE TANK DISCHARGE CONTROL, THE SYSTEM PUMP(S) SHALL BE ENABLED IF NOT ALREADY ENABLED, AND THE ICE STORAGE MIXING VALVE SHALL MODULATE TO MAINTAIN 42 DEG. F (ADJ.) TO THE BUILDING LOAD.
   B. THE COOLING PLANT CONTROL SYSTEM SHALL LIMIT THE CHILLER CAPACITY TO MEET THE DEMAND LIMIT STRATEGY.
   C. IF THE ICE TANK SUPPLY TEMPERATURE REACHES ITS HIGH LIMIT (45) DEG. F (ADJ.) FOR 5-MINUTES, THEN THE ICE MIXING VALVE SHALL BYPASS THE ICE STORAGE TANKS AND AN ALARM SHALL BE GENERATED AT THE BAS OPERATOR INTERFACE. THE PLANT SHALL TRANSITION INTO CHILLER ONLY COOLING MODE OF OPERATION.
   D. THE SYSTEM CONTROLLER SHALL MONITOR THE TARGET DISCHARGE RATE, THE CHILLER MINIMUM FLOW, THE CHILLER MINIMUM LOAD, AND THE BUILDING LOAD TO DETERMINE WHETHER TO STAY IN SIMULTANEOUS CHILLER AND ICE COOLING MODE OR TRANSITION TO EITHER CHILLER ONLY OR ICE ONLY COOLING MODES.
   E. CHILLED WATER PUMPS WILL BE CONTROLLED AS CALLED OUT IN THE PUMP SEQUENCES BELOW.
12. SYSTEM OFF (STORAGE TANKS SECURED):
   A. WHEN COOLING IS NOT REQUIRED, AND OTHER MODES HAVE BEEN SATISFIED THE COOLING PLANT CONTROLLER SHALL TRANSITION TO ICE STORAGE SYSTEM OFF MODE. AFTER 5 MINUTES (ADJ.) THE ICE STORAGE MIXING VALVE SHALL BYPASS THE ICE TANKS AND THE ICE STORAGE MODE VALVE SHALL BE POSITIONED TO FULL FLOW TO THE BUILDING LOAD.
13. PRIMARY PUMP CONTROL:
   A. SYSTEM CONTROLLER SHALL MODULATE SYSTEM PUMP MOTOR(S) VARIABLE FREQUENCY CONTROLLER(S) TO MAINTAIN A FIXED PRESSURE DIFFERENTIAL (PSID) SETPOINT MEASURED BY AN PRESSURE DIFFERENTIAL CONTROLLER LOCATED 75% OF MAXIMUM MAIN PIPE DISTANCE DOWNSTREAM OF SYSTEM (FINAL POSITION TO BE APPROVED BY ENGINEER).
   B. COORDINATE MINIMUM FLOW RATE WITH ACTUAL CHILLER/PUMP(S) INSTALLED.
   C. SETPOINT TO BE DETERMINED BY TEST AND BALANCE CONTRACTOR.
14. SYSTEM CONTROLLER SHALL MONITOR CHILLED WATER SYSTEM GALLON PER MINUTE (GPM)
15. FILTER PRESSURE DIFFERENTIAL CONTROLLER SHALL MONITOR FILTER PRESSURE DIFFERENTIAL.
   1. WHEN PUMP IS ENABLED AND FILTER PRESSURE DIFFERENTIAL READING IS GREATER THAN FILTER ALARM SETPOINT, THE DDC SHALL INDICATE A GENERAL ALARM.
      a. ALARM SETPOINT SHALL BE 10 PSID (ADJ.).
16. SYSTEM SHALL MONITOR GLYCOL MAKE-UP UNIT AND PROVIDE A LOW TANK VOLUME LEVEL ALARM
17. EMERGENCY POWER CONTROL – WHEN BUILDING IS ON EMERGENCY POWER, SYSTEM CONTROLLER SHALL RESPOND BASED ON THE FOLLOWING:
   A. SYSTEM SHALL BE DISABLED DURING EMERGENCY POWER

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MECHANICAL CONTROLS

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ALL SHEETS INTENDED FOR COLOR PLOT. VERIFY BLACK-AND-WHITE PLOT FOR INFORMATION INTEGRITY

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POWER SYMBOLS — MOUNTING HEIGHTS

M	ELECTRIC METER	
SPD	SURGE PROTECTION DEVICE	
MCM	MULTI CHANNEL METER	
	MOTOR CONTROL CENTER	90" TO TOP
	PANELBOARD	72" TO TOP
	DISTRIBUTION PANELBOARD	72" TO TOP
EQ	ELECTRICAL EQUIPMENT CONNECTION - REFER TO CONNECTION SCHEDULES FOR FEEDER SIZE, BREAKERS, DISCONNECT MEANS ETC.	
TCP	TEMPERATURE CONTROL PANEL	72" TO TOP
	DISCONNECT SWITCH - UNFUSED	
	DISCONNECT SWITCH - FUSED	
	COMBINATION DISCONNECT/MAGNETIC MOTOR STARTER	
M	MANUAL MOTOR STARTER WITH PILOT LIGHT	40"
	BUSSMANN "SSU" W/FUSES	
VFD	VARIABLE FREQUENCY DRIVE	
5	MOTOR - HP AS INDICATED	
	FUSE	
	CIRCUIT BREAKER	
ET	CIRCUIT BREAKER - ELECTRONIC TRIP	
	SWITCH	
	POWER FACTOR CORRECTION CAPACITOR	
C	COIL	
G	INDICATOR LIGHT (R=RED, G=GREEN, B=BLUE, Y=YELLOW, A=AMBER)	
	CURRENT TRANSFORMER	
	THERMAL OVERLOADS	
	CONTACTS - NORMALLY OPEN	
	CONTACTS - NORMALLY CLOSED	
	TRANSFORMER	
R	RELAY	
CT	CURRENT TRANSFORMER	
T	TRANSFORMER	
	SYSTEM GROUND - REFER TO SPECIFICATIONS	
	PUSH-BUTTON STATION - 1 HOLE	40"
	PUSH-BUTTON STATION - 2 HOLE	40"
	PUSH-BUTTON STATION - 3 HOLE	40"
	EMERGENCY MUSHROOM HEAD PUSH-BUTTON STATION - 1 HOLE	40"
LC	LIGHTING CONTACTOR	
TC	TIME CLOCK	72" TO TOP
J	JUNCTION BOX - SIZE AND TYPE AS REQUIRED	
P	PULL BOX - SIZE AND TYPE AS REQUIRED	
HH	FLUSH IN-GRADE HAND HOLE	
DO	DOOR OPERATOR	
FV	ELECTRONIC FLUSH VALVE - COORDINATE TRANSFORMER LOCATION AND QUANTITY WITH PLUMBING CONTRACTOR - WIRE TO TRANSFORMER AND LOW VOLTAGE TO VALVES PER MANUFACTURERS REQUIREMENTS. PROVIDE WITH MAINTENANCE SWITCH.	

RECEPTACLE SYMBOLS

	DUPLEX RECEPTACLE	16"
	DUPLEX RECEPTACLE - 4" ABOVE COUNTER BACKSPLASH	
WP	DUPLEX RECEPTACLE - WET LOCATION ENCLOSURE WITH GFI	
	SIMPLEX RECEPTACLE	16"

RECEPTACLES VARIATIONS - HEIGHT PER ABOVE UNLESS INDICATED ON DRAWINGS:

	DOUBLE DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE - SURFACE MOUNTED #WM500
	DUPLEX RECEPTACLE - EMERGENCY
GFI	DUPLEX RECEPTACLE - WITH GFI
EWC	DUPLEX RECEPTACLE - FOR ELECTRIC WATER COOLER, WITH GFI
USB	DUPLEX RECEPTACLE - WITH (2) USB OUTLETS BETWEEN POWER
H	DUPLEX RECEPTACLE - HORIZONTAL MOUNTING
ST	DUPLEX RECEPTACLE - STACK ALIGNED BELOW DEVICE ABOVE (DEVICE ALIGNMENT IS NOT LIMITED TO THOSE LABELED, REFER TO ELECTRICAL DEVICE ALIGNMENT GUIDELINES)

NOTES:
MOUNT DEVICES AT HEIGHTS INDICATED UNLESS INDICATED OTHERWISE ON PLANS. HEIGHTS ARE TO BOTTOM OF DEVICE.

ELECTRICAL ABBREVIATIONS

(#)	# INDICATES QUANTITIES (I.E. (4) 3" CONDUITS MEANS FOUR 3" DIAMETER CONDUITS)
(E)	EXISTING
AFC	ABOVE FINISHED CEILING
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CT	CURRENT TRANSFORMER
CU	COPPER
DFA	DROP FROM ABOVE
DW	DISHWASHER
EM	EMERGENCY
ET	ELECTRONIC TRIP
EWC	ELECTRIC WATER COOLER
FDS	FUSIBLE DISCONNECT SWITCH
GAP	GENERATOR ANNUNCIATOR PANEL
GD	GARBAGE DISPOSAL
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER, 5mA
GFP	GROUND FAULT PROTECTION OF EQUIPMENT, 30mA
GND	GROUND
IAW	IN ACCORDANCE WITH
IC	INSULATION CONTACT
IDF	INTERMEDIATE DISTRIBUTION FRAME
JB	JUNCTION BOX
KCMIL	THOUSANDS OF CIRCULAR MILS
LCP	LIGHTING CONTROL PANEL
MDF	MAIN DISTRIBUTION FRAME
NFDS	NON-FUSIBLE DISCONNECT SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NTS	NOT TO SCALE
OC	ON CENTER
PB	PULL BOX
REF	REFRIGERATOR
RT	RAINTIGHT
SPD	SURGE PROTECTIVE DEVICE
TR	TAMPER RESISTANT
TTB	TELECOMMUNICATIONS TERMINAL BOARD
TX	TRANSFORMER
TYP	TYPICAL
ULSE	UL SERVICE ENTRANCE RATED
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
WP	WEATHERPROOF

GENERAL NOTES - ELECTRICAL - POWER

1. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR NEW WORK OR WHERE DEVICES ARE REMOVED AND NOT REPLACED.
2. ELECTRICAL CONTRACTOR SHALL VERIFY VOLTAGE OF TRANSFORMER OR ANY MECHANICAL OR OTHER EQUIPMENT PRIOR TO ORDERING ELECTRICAL EQUIPMENT. FOR A PRIMARY TRANSFORMER, CONTRACTOR TEST AND CHECK EXISTING VOLTAGE OR GET LETTER FROM UTILITY STATING VOLTAGE AND CONFIGURATION OF INCOMING SERVICE PRIOR TO ORDERING EQUIPMENT.
3. PATCH ALL PENETRATIONS AS REQUIRED TO MAINTAIN FIRE RATING.
4. REFER TO INTERIOR ELEVATIONS, SECTIONS, ARCHITECTURAL ELEVATIONS AND RELATED DRAWINGS FOR EXACT DEVICE LOCATIONS AND MOUNTING HEIGHTS. WHERE DEVICES ARE MOUNTED UNDER OR ABOVE TACK BOARDS, DOORS, WINDOWS, OR ANY PIECE OF EQUIPMENT, THE ELECTRICAL DEVICE SHALL BE CENTERED AS SHOWN. COORDINATE LOCATION OF FURNITURE CONNECTIONS AND/OR RECEPTACLES AND DATA RACEWAYS WITH APPROVED FURNITURE SHOP DRAWINGS, FINAL CONNECTIONS TO FURNITURE BY ELECTRICAL CONTRACTOR.
5. ALL CONDUITS SHALL RUN AS NEAR TO DECK AS PERMITTED BY CODE. SOME CONDUITS WILL BE EXPOSED AND SHALL BE RUN IN A NEAT MANNER. MAINTAIN THE SAME SPACING WHEN CONDUITS ARE RUN TOGETHER. CONCEAL JUNCTION BOXES OVER LAY-IN CEILING AND USE EMT DROPS DOWN TO CLOUDS. LOCATE CONDUIT DROPS TO CLOUDS AND CEILING ELEMENTS IN LEAST VISIBLE LOCATION.
6. WHEN CEILINGS ARE REMOVED ELECTRICAL CONTRACTOR SHALL PROPERLY SUPPORT ALL CONDUIT AND LOW VOLTAGE WIRING AS REQUIRED PER NEC.
7. REMOVE CEILINGS AND GRID AS REQUIRED. REPLACE ANY DAMAGED CEILINGS.
8. ALL KITCHEN RECEPTACLES, BATHROOM RECEPTACLES, OUTDOOR RECEPTACLES, OUTLETS WITHIN 6' OF SINK AND ANY OTHER REQUIRED BY 210.8B TO BE GFCI PROTECTED PER NEC REQUIREMENTS. PROVIDE REMOTE GFCI TESTING DEVICE FOR INACCESSIBLE GFCI DEVICES.
9. CONNECT POWER TO ALL VAV, TERMINAL UNITS AND MISCELLANEOUS MECHANICAL DAMPERS AND VALVES PROVIDED WITH LOW VOLTAGE TRANSFORMERS. PROVIDE AT LEAST A CIRCUIT FOR EVERY 4 UNITS TO BE ON A TRANSFORMER, COORDINATE EXACT LOCATIONS AND TRANSFORMER QUANTITIES WITH BUILDING AUTOMATION SYSTEM AND MECHANICAL CONTRACTORS AND REFER TO MECHANICAL CONTROLS AND SEQUENCE OF OPERATIONS DETAIL. THESE ITEMS ARE NOT SHOWN ON ELECTRICAL DRAWINGS. DO NOT USE SPARE BREAKERS INDICATED IN PANEL SCHEDULES FOR THESE CIRCUITS, NOTIFY PANELBOARD MANUFACTURERS OF QUANTITIES OF THESE BREAKERS REQUIRED. ELECTRICAL CONTRATOR IS RESPONSIBLE FOR POWERING EACH TRANSFORMER REGARDLESS OF QUANTITY OR LOCATION
10. CONNECT BAS CONTROL PANEL TO EMERGENCY CIRCUIT (IF AVAILABLE) AND COORDINATE BAS PANEL LOCATION WITH CONTROLS CONTRACTOR.
11. PROVIDE 120V CIRCUIT FROM NEAREST GENERATOR STANDBY PANEL FOR ALL BMS/BAS CONTROL PANELS. COORDINATE LOCATION AND NUMBER OF CIRCUITS WITH CONTROLS CONTRACTOR.
12. RECESS NEW DEVICES AND ASSOCIATED CONDUITS AND BACKBOX IN EXISTING WALLS WHERE POSSIBLE. CUT AND PATCH AS REQUIRED.
13. PROVIDE FINAL CONNECTION TO ALL OWNER/CONTRACTOR PROVIDED EQUIPMENT. COORDINATE RECEPTACLE SIZES AND TYPE WITH EQUIPMENT, ADJUST CIRCUIT SIZE AS REQUIRED.

GENERAL NOTE - ELECTRICAL - DEMOLITION

1. FIXTURES, DEVICES AND EQUIPMENT SHOWN DASHED OR WITH AN "X" ARE TO BE REMOVED. FIXTURES, DEVICES AND EQUIPMENT SHOWN LIGHTLY OR WITH AN "E" ARE EXISTING TO REMAIN UNDISTURBED.
2. DEVICES SHOWN WITH AN "R" ARE EXISTING TO BE REPLACED WITH NEW DEVICE AND COVERPLATE. REUSE EXISTING CODE COMPLIANT WIRING.
3. REMOVE ALL LIGHT FIXTURES, DEVICES, WIRING AND EXPOSED CONDUIT FROM WALL AND CEILINGS TO BE DEMOLISHED. COORDINATE WITH ARCHITECTURAL. REMOVE ABANDONED EXPOSED CONDUIT AND ABANDONED WIRING BACK TO SOURCE. RE-LABEL CIRCUIT BREAKER AS A SPARE.
4. TEMPORARILY SUPPORT EXISTING CEILING DEVICES TO REMAIN IN EXISTING CEILINGS TO BE REPLACED. REINSTALL DEVICES INTO NEW CEILING.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROJECT PHASING. TEMPORARY POWER, EGRESS LIGHTING, EXIT SIGNAGE, PULL STATIONS AND BATTERY BACKUP LIGHTING SHALL BE PROVIDED AS REQUIRED WHILE BUILDING IS OCCUPIED BETWEEN PHASES OF CONSTRUCTION.
6. PATCH AND REPAIR ANY MATERIALS TO MATCH ADJACENT FOR ANY EQUIPMENT OR LIGHT FIXTURES REMOVED OR MATERIALS DAMAGED IN REMOVAL.

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SHEET TITLE
ELECTRICAL SYMBOLS AND GENERAL NOTES

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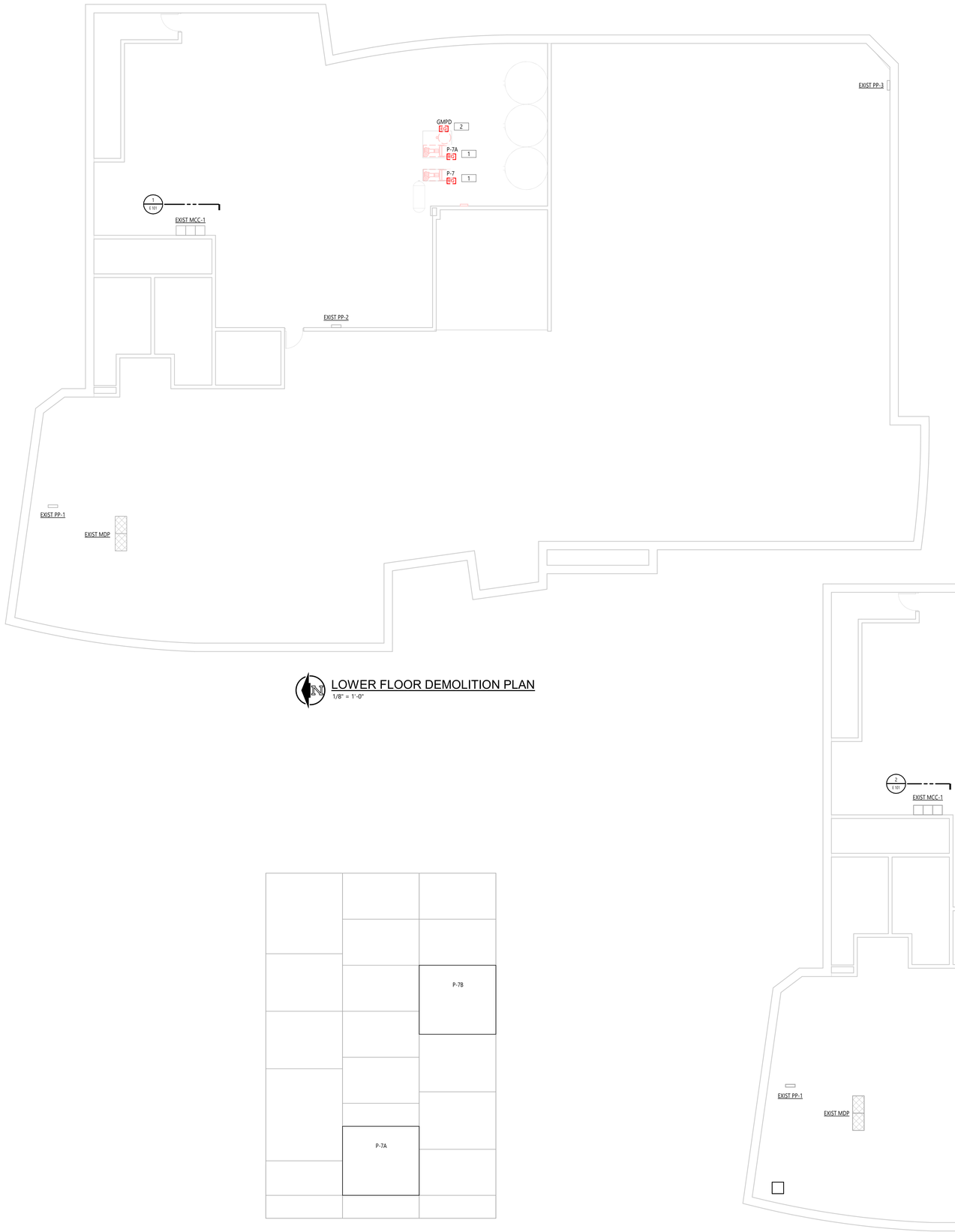
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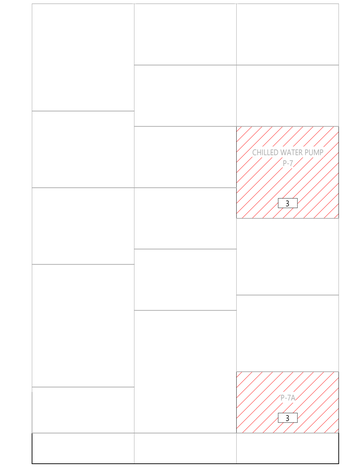
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KEYED NOTES - ELECTRICAL - DEMOLITION

1. DISCONNECT AND REMOVE FEEDER AND CONDUIT TO EXISTING MECHANICAL EQUIPMENT TO BE REMOVED, COORDINATE WITH MECHANICAL.
2. DISCONNECT AND PRESERVE FEEDER AND CONDUIT TO EXISTING MECHANICAL EQUIPMENT TO BE REMOVED, COORDINATE WITH MECHANICAL.
3. REMOVE STARTER MCC BUCKET, REPLACE WITH NEW BREAKER MCC BUCKET

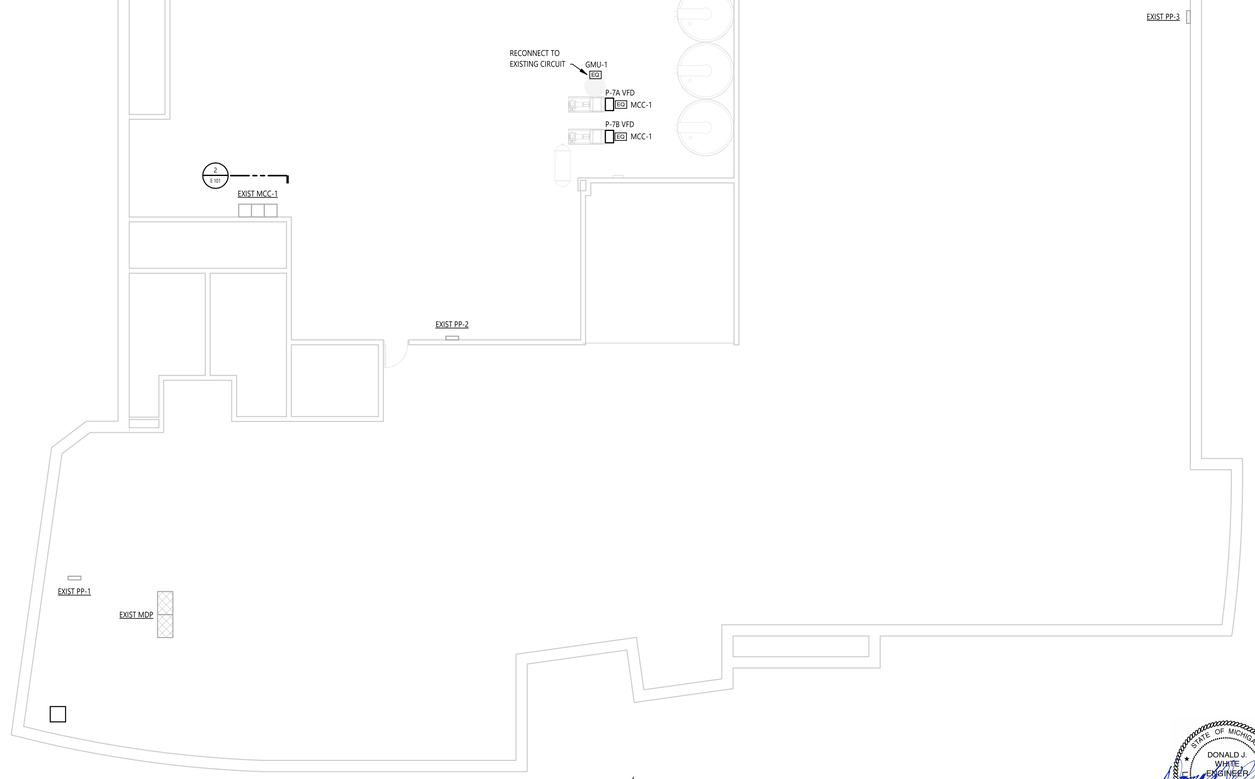


LOWER FLOOR DEMOLITION PLAN
1/8" = 1'-0"



MCC-1 DEMOLITION ELEVATION
SCALE: NONE

MCC-1 ELEVATION
SCALE: NONE



LOWER FLOOR POWER PLAN
1/8" = 1'-0"

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LOWER FLOOR POWER PLANS

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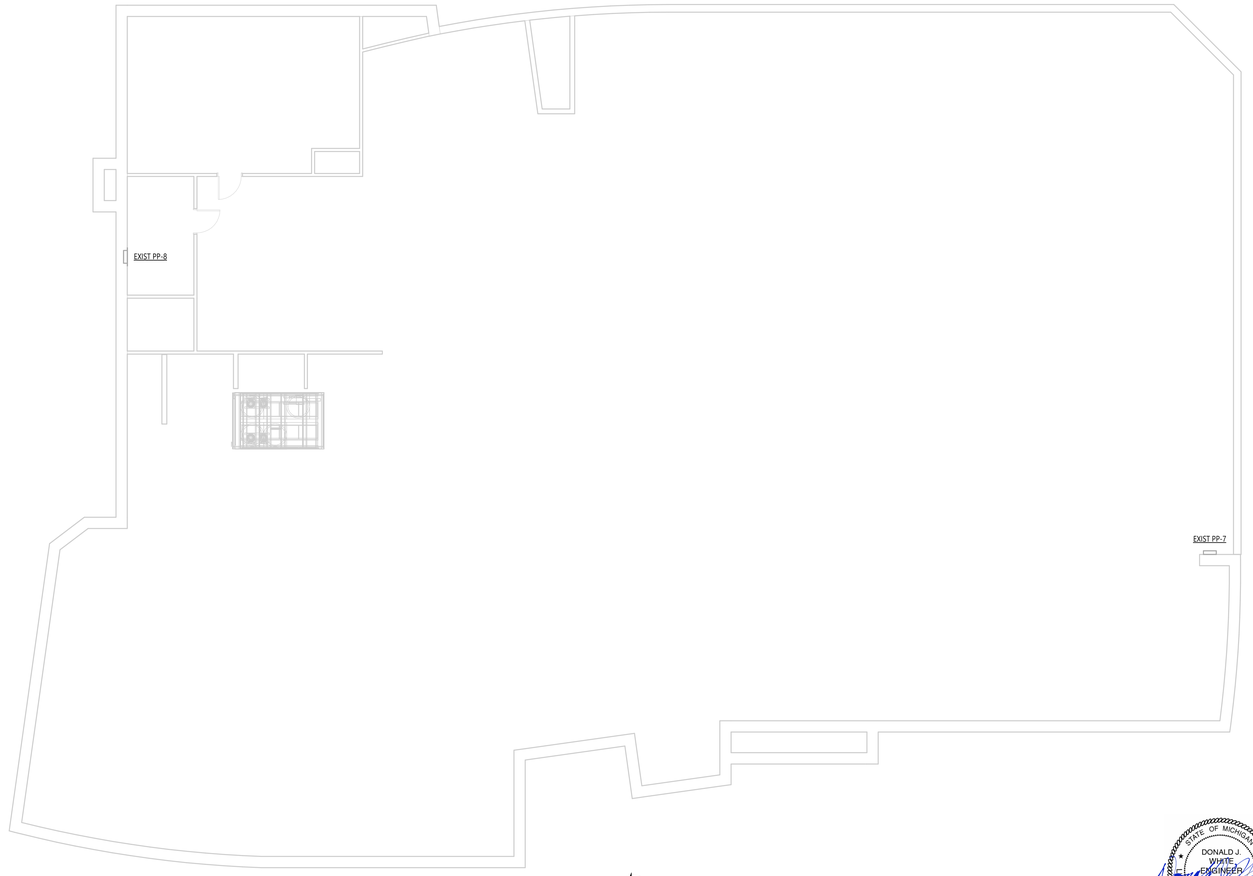
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HML CHILLER REPLACEMENT



SECOND FLOOR POWER PLAN
1/8" = 1'-0"

OWNER
CITY OF ZEELAND

SITE ADDRESS
14 S CHURCH ST
ZEELAND, MI

SEAL

STATE OF MICHIGAN
DONALD J. WHITE
ENGINEER
NO. 6201038287
10/23/2026
PROFESSIONAL ENGINEER

SHEET TITLE
SECOND FLOOR POWER PLAN

DATE
OCTOBER 23, 2026

SHEET NUMBER
E 102

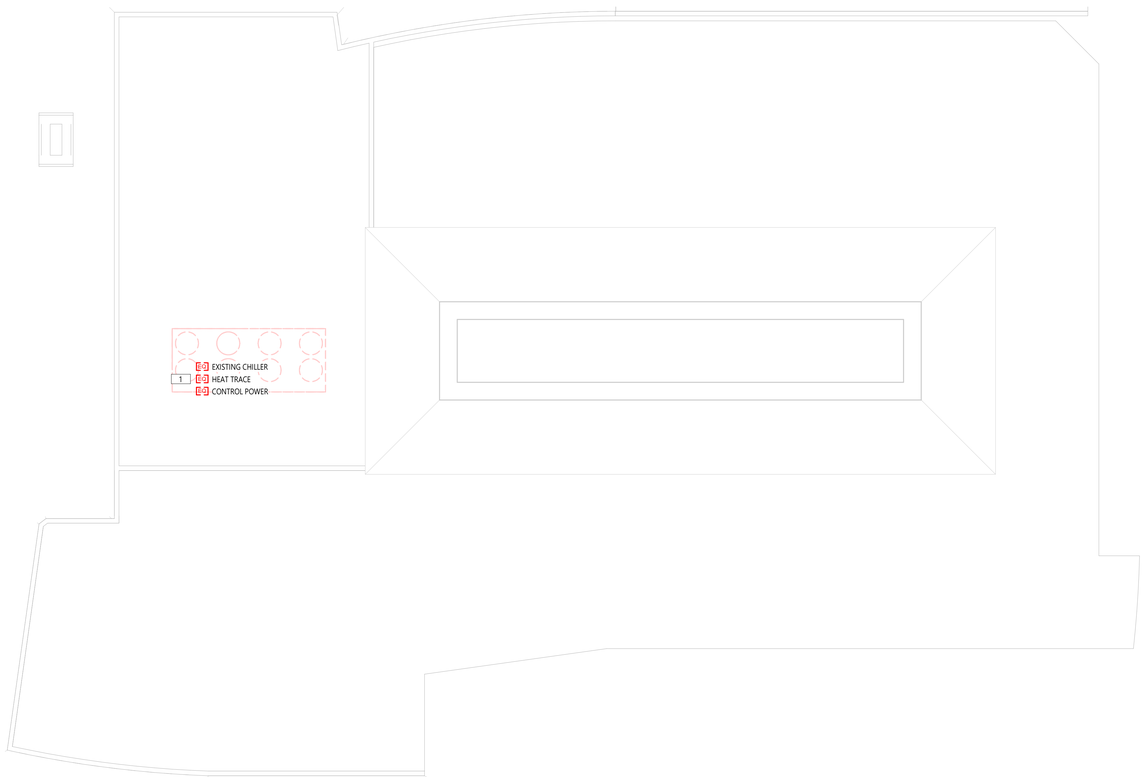
PROJECT NUMBER
26-222.000

ALL SHEETS INTENDED FOR COLOR PLOT. VERIFY BLACK-AND-WHITE PLOT FOR INFORMATION INTEGRITY

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KEYED NOTES - ELECTRICAL - ROOF - DEMOLITION

1 DISCONNECT AND PRESERVE FEEDER AND CONDUIT TO EXISTING HEAT TRACE, CONTROL POWER, AND CHILLER TO BE REMOVED. DEMOLISH CHILLER FLEX CONDUIT AT ROOF PENETRATION. COORDINATE WITH MECHANICAL.



ROOF DEMOLITION PLAN
1/8" = 1'-0"



ROOF POWER PLAN
1/8" = 1'-0"

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ISSUED FOR **DATE**

PROJECT TITLE
HML CHILLER REPLACEMENT

OWNER
CITY OF ZEELAND

SITE ADDRESS
14 S CHURCH ST
ZEELAND, MI

SEAL

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ROOF POWER PLANS

DATE
OCTOBER 23, 2026

SHEET NUMBER
E 103

PROJECT NUMBER
26-222.000

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ELECTRICAL HVAC FEEDER SCHEDULE

DESCRIPTION	FED FROM	DISCONNECT MEANS	CURRENT (FLA)	DEMAND (FLA)	BREAKER/POLES	FEEDER # OF SETS	FEEDER # OF WIRES	FEEDER # OF SETS	FEEDER WIRE	FEEDER GROUND	FEEDER EMT	ACCUM VOLT DROP %
208 V												
CHILLER	MDP	FACTORY SUPPLIED	286 A	286 A	400 A/3	2	3	2 SETS	3 #3/0	#3 GND.	2"	1.9%
P-7A	MCC-1	VFD	62 A	62 A	100 A/3	1	3	1 SET	3 #1	#8 GND.	1 1/2"	1.7%
P-7B	MCC-1	VFD	62 A	62 A	100 A/3	1	3	1 SET	3 #1	#8 GND.	1 1/2"	1.7%

GENERAL: CONDUIT SIZES BASED ON EMT AND COPPER CONDUCTORS UNLESS OTHERWISE NOTED. UPSIZE AS REQUIRED WHERE PVC OR GALVANIZED IS USED OR REQUIRED PER SPECIFICATIONS.

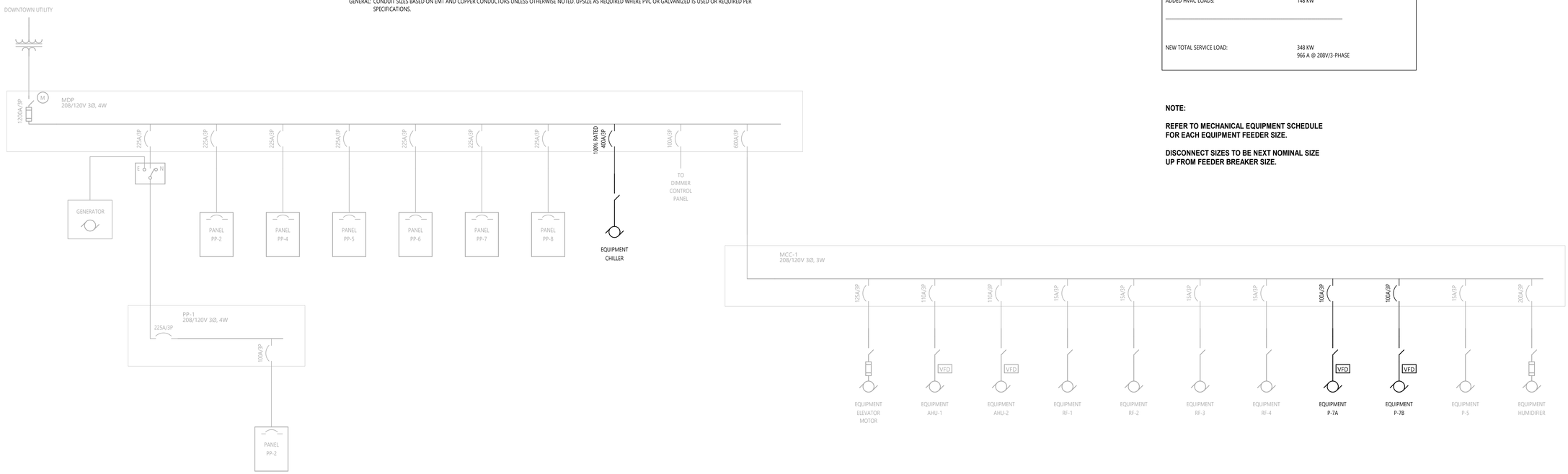
ELECTRICAL SERVICE CALCULATION:

EXISTING 12-MONTH PEAK DEMAND:	160 KW 444 A @ 208V/3-PHASE
AT 125% PER NEC:	200 KW
ADDED HVAC LOADS:	148 KW
NEW TOTAL SERVICE LOAD:	348 KW 966 A @ 208V/3-PHASE

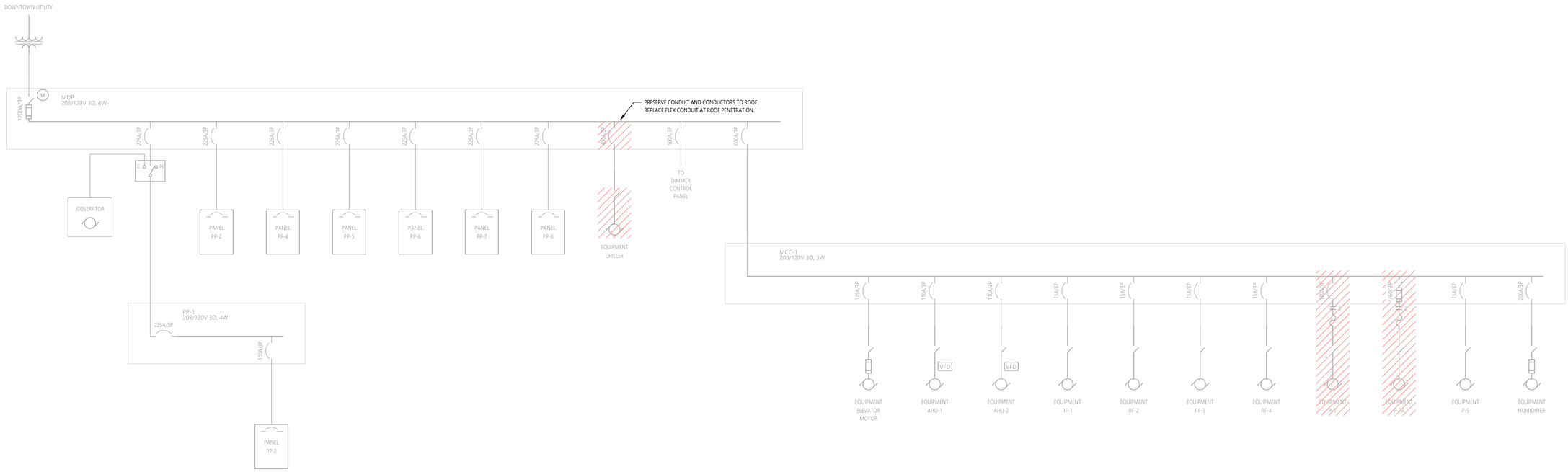
NOTE:

REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR EACH EQUIPMENT FEEDER SIZE.

DISCONNECT SIZES TO BE NEXT NOMINAL SIZE UP FROM FEEDER BREAKER SIZE.



ONE LINE
SCALE: NONE



ONE LINE DEMOLITION
SCALE: NONE

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ZEELAND, MI

SEAL

SHEET TITLE
ELECTRICAL
ONE-LINE DIAGRAMS

DATE
OCTOBER 23, 2026

SHEET NUMBER
E 401

PROJECT NUMBER
26-222.000

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