

9525.00-IPBS MOTIVAIR CHILLER REPLACEMENTS

DES MOINES, IA



100% CONSTRUCTION DOCUMENTS SUBMITTAL

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E101	ELECTRICAL POWER
S001	STRUCTURAL NOTES & DETAILS
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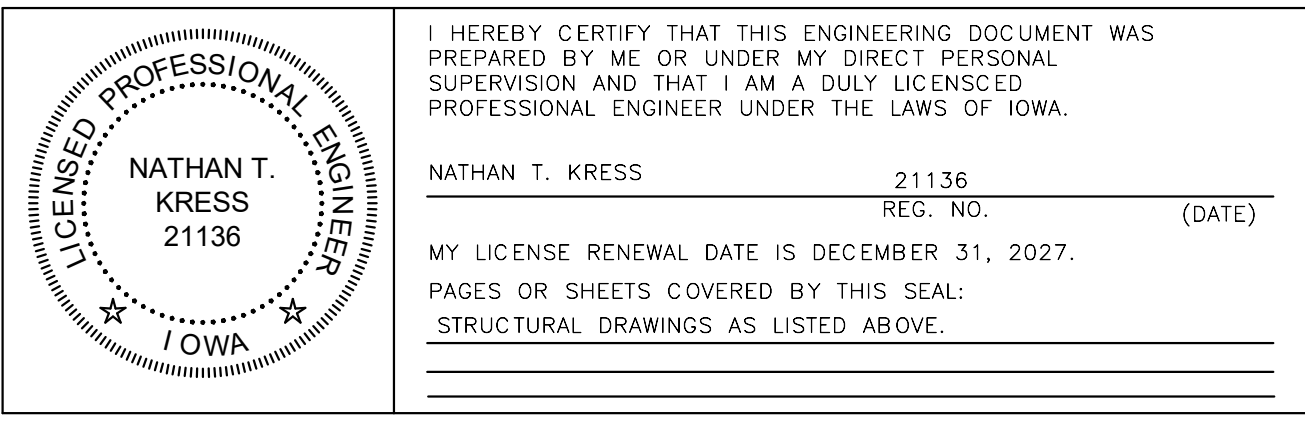
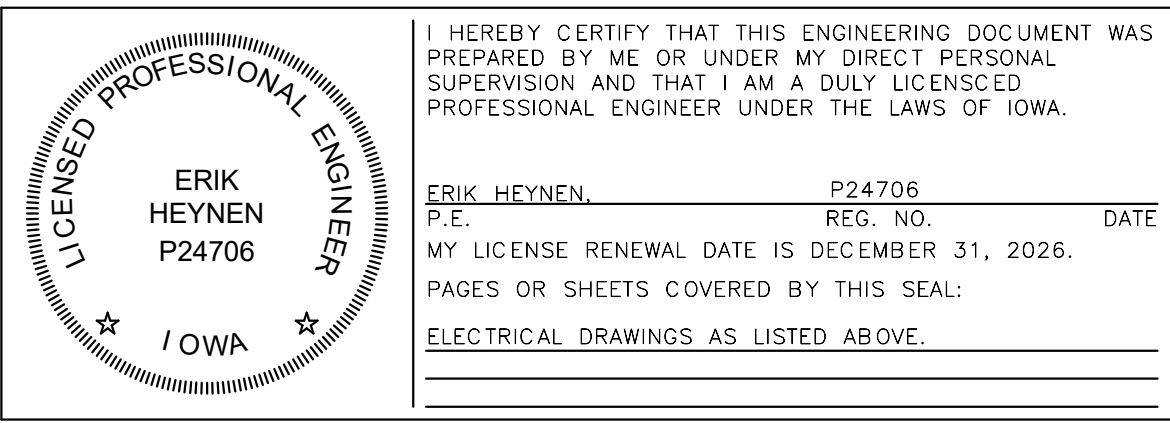
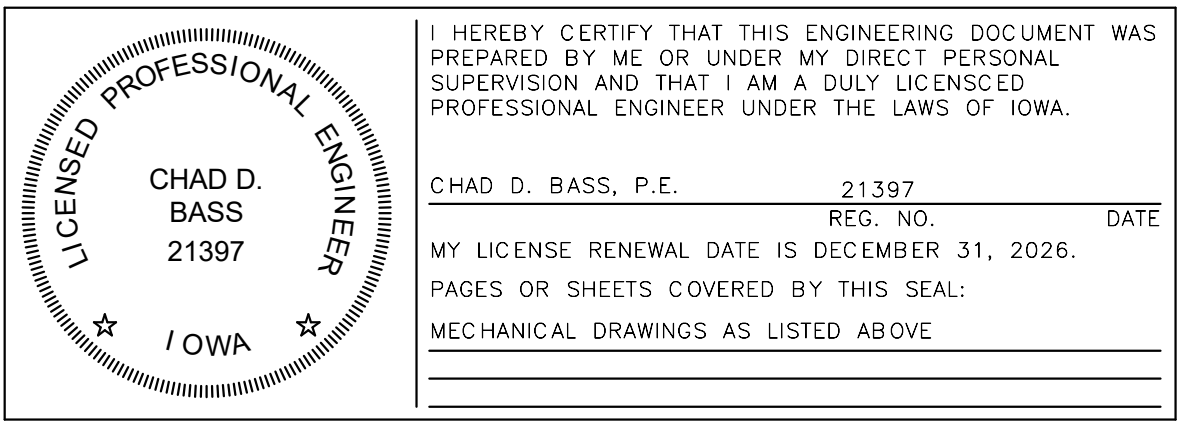
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DAS IPBS
MOTIVAIR CHILLER REPLACEMENT
6450 CORPORATE DRIVE,
JOHNSTON, IA 50131

Project No: 9525.00

Date: 07/06/2026

CONSTRUCTION DOCUMENTS

#	Revision	Date

Drawing Name:
TITLE SHEET

Drawing #:
TS

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MECHANICAL – DEMOLITION NOTES

- MECHANICAL DEMOLITION DRAWINGS SHOWING EXISTING CONDITIONS HAVE BEEN PREPARED BASED ON NON-DESTRUCTIVE FIELD OBSERVATION AND AS-BUILT DRAWINGS PROVIDED BY THE OWNER. FIELD VERIFY EXISTING SYSTEMS BEFORE BEGINNING WORK. NOTIFY ARCHITECT/ENGINEER IF EXISTING CONDITIONS ARE MATERIALLY DIFFERENT THAN THOSE SHOWN ON THE PLANS.
- BE FAMILIAR WITH EXISTING MECHANICAL SYSTEMS THAT WILL BE AFFECTED BY THE DEMOLITION WORK. OBTAIN PERMISSION FROM THE OWNER'S REPRESENTATIVE TO SHUT OFF SERVICES OR SYSTEMS THAT AFFECT AREAS BEYOND THE LIMITS OF THE IMMEDIATE DEMOLITION AREA. INFORM THE OWNER'S REPRESENTATIVE OF THE REASON FOR AND DURATION OF THE SHUT-DOWN. MINIMIZE IMPACT TO OTHER AREAS. PROCEED WITH THE SHUT-DOWN AFTER PERMISSION FROM THE OWNER IS GRANTED.
- REMOVE PIPING, HANGERS, DUCTWORK, GRILLES, REGISTERS, DIFFUSERS, ETC. THAT ARE INDICATED TO BE REMOVED IN A TIMELY MANNER IN ACCORDANCE WITH THE GENERAL DEMOLITION SPECIFICATIONS. COORDINATE WITH THE OWNER AND OTHER CONTRACTORS.
- UNLESS EQUIPMENT TO BE REMOVED IS NOTED AS OWNER'S SALVAGE, DISPOSE OF EQUIPMENT AND/OR MATERIALS INDICATED TO BE REMOVED PROMPTLY.
- REMOVE ALL ABANDONED PIPING AND DUCTWORK THAT IS EXPOSED OR ACCESSIBLE WITHOUT WALL OR CEILING DEMOLITION.

HVAC - NOTES

- COORDINATE WORK WITH ALL OTHER TRADES AS DESCRIBED IN MECHANICAL GENERAL NOTE #1.
- INSTALL ALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. INSTALL SYSTEM TO MEET ALL CITY AND STATE CODES AND REQUIREMENTS.
- CONTINUE PIPE INSULATION THROUGH WALLS, FLOORS, AND CEILING PENETRATIONS UNBROKEN. SEAL AROUND INSULATION AT WALL PENETRATIONS.

MECHANICAL - GENERAL NOTES

- COORDINATE MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. BEGIN INSTALLATION AND ROUGH-IN AFTER COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION IS COMPLETE. COORDINATE BUILDING STRUCTURE, ARCHITECTURAL ASSEMBLIES, SHEET METAL, ALL PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT. CONTRACTOR IS RESPONSIBLE FOR REWORK ASSOCIATED WITH FAILURE TO COORDINATE.
- INCORPORATE MECHANICAL SPECIFICATIONS, DRAWINGS, STATE AND LOCAL CODES INTO WORK.
- EACH TRADE IS RESPONSIBLE FOR MAKING PENETRATIONS WHERE REQUIRED IN EXISTING WALLS, FLOORS, CEILINGS, AND ROOFS. MAKE PENETRATIONS NEAT. PATCH, CONCEAL, OR CAULK OVERCUT.
- COVER EXPOSED WALL PENETRATIONS WITH ESCUTCHEONS OR SHEET METAL AS APPROPRIATE.
- CAULK ALL CONCEALED AND EXPOSED PIPING AND DUCT WALL PENETRATIONS TO PREVENT NOISE TRANSFER BETWEEN SPACES.
- CREATE OPENINGS IN THE BUILDING THAT ARE REQUIRED TO REMOVE EXISTING ITEMS AND TO BRING IN NEW EQUIPMENT. PATCH ALL OPENINGS CREATED AND FINISHED WITH MATERIALS TO MATCH EXISTING CONDITIONS. INCLUDE THIS WORK IN BID.
- ON COMPLETION OF THE INSTALLATION, COOPERATE WITH THE OWNER TO PROVIDE TESTING, ADJUSTING, AND BALANCING TO OBTAIN PROPER OPERATION OF ALL EQUIPMENT AND SYSTEMS. PROVIDE ALL FACILITIES AND EQUIPMENT AND COMPLETE ALL TESTS REQUIRED FOR ADJUSTMENTS AND BALANCING TO ESTABLISH THE PROPER PERFORMANCE OF EQUIPMENT.
- PROVIDE WARRANTIES FOR ALL EQUIPMENT AND INSTALLATION PER THE CONTRACT DOCUMENTS. CONDITIONING REFRIGERATION SYSTEMS SHALL BE WARRANTED FOR A MINIMUM OF 5 YEARS, PARTS ONLY, NON-PRORATED, FROM THE DATE OF OCCUPANCY OR SUBSTANTIAL COMPLETION, OR WHICHEVER OCCURS FIRST. THE WARRANTY SHALL COVER COMPRESSORS, EVAPORATORS, CONDENSER COILS, HIGH AND LOW SIDE PIPING, AND PIPING SPECIALTIES INCLUDING EXPANSION AND SOLENOID VALVES, RELIEF VALVES, FILTER-DRYER, AND SIGHT GLASSES. PRESSURE GAUGES AND PRESSURE SWITCHES ARE NOT UNDER THE EXTENDED WARRANTY EXCEPT FOR LOSS OF REFRIGERANT AND CONSEQUENTIAL DAMAGE TO THE SYSTEM WHICH WILL BE AN EXTENDED WARRANTY OBLIGATION. ALL DEFECTS THAT BECOME APPARENT WITHIN THE WARRANTY PERIOD SHALL BE REPAIRED BY THE MECHANICAL CONTRACTOR AS DIRECTED BY THE ENGINEER THROUGH THE OWNER'S REPRESENTATIVE. WARRANTY DOES NOT OBLIGATE THE MECHANICAL CONTRACTOR TO REPAIR DAMAGE RESULTING FROM THE OWNER'S ACCIDENT, IMPROPER OPERATION, OR FAILURE TO PROVIDE MAINTENANCE. WARRANTY COVERS DEFECTIVE MATERIAL AND INSTALLATION. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS AND OTHER WARRANTY INFORMATION.

PROJECT PHASING INTENT: ONE CHILLER AND ONE PUMP AT A TIME SHOULD REMOVED/REPLACED TO ENSURE THE FACILITY CHILLED WATER SYSTEM REMAINS OPERATIONAL AT ALL TIMES. THERE IS ALSO A DX CRAC UNIT THAT SERVES AS A BACK UP TO THE CHILLED WATER SYSTEM.

MECHANICAL ABBREVIATIONS

ABSOR	ABSORPTION	FT	FINTUBE
ACU	AIR CONDITIONING UNIT	FTG	FOOTING
AD	ACCESS DOOR OR AREA DRAIN	GA	GAGE
AFF	ABOVE FINISHED FLOOR	GAL	GALLON
AFG	ABOVE FINISHED GRADE	GALV	GALVANIZED
AHU	AIR HANDLING UNIT	GC	GENERAL CONTRACTOR
AV	AIR VENT	GW	GREASE WASTE
BOT	BOTTOM	GPH	GALLONS PER HOUR
BTU	BRITISH THERMAL UNIT	GPM	GALLONS PER MINUTE
BTUH	BTU PER HOUR	HR	HOUR
BV	BALL VALVE	HTG	HEATING
CA	COMPRESSED AIR	HB	HOSE BIBB
CB	CATCH BASIN	ISP	INTERNAL STATIC PRESSURE
CENT	CENTRIFUGAL	JR	JANITOR RECEPTOR
CFM	CUBIC FEET PER MINUTE	LAV	LAVATORY
CI	CAST IRON	LDBT	LEAVING DRY BULB
CL	CENTER LINE	LWT	LEAVING WATER
COND	CONDENSATE	LWBT	LEAVING WET BULB
CO	CLEAN OUT	TEMPERATURE	TEMPERATURE
CONC	CONCRETE	TEMPERATURE	TEMPERATURE
CONTR	CONTRACTOR	MB	MOP BASIN
CP	CONDENSATE PUMP/CIRC. PUMP	MBH	1000 BTUH
CU	COPPER	MC	MECHANICAL CONTRACTOR
CUH	CABINET UNIT HEATER	MECH	MECHANICAL
OWP	CIRCULATING WATER PUMP	MH	MANHOLE
DDC	DIRECT DIGITAL CONTROLS	NTS	NOT TO SCALE
DN	DOWN	OA	OUTSIDE AIR
DR	DRAIN	OD	OVERFLOW ROOF DRAIN
DS	DOWNSPOUT	PC	PLUMBING CONTRACTOR
EA	EXHAUST AIR	PSI	POUNDS PER SQUARE INCH
EAT	EXHAUST AIR TEMPERATURE	PRV	POWER ROOF VENTILATOR
EC	ELECTRICAL CONTRACTOR	PRV	PRESSURE REDUCING VALVE
EDBT	ENTERING DRY BULB	PV	PRESSURE VENT
TEMPERATURE	TEMPERATURE	PVC	POLYVINYL CHLORIDE
EEW	EMERGENCY EYE WASH	RA	RETURN AIR
EF	EXHAUST FAN	RD	ROOF DRAIN
EJ	EXPANSION JOINT	RH	RELATIVE HUMIDITY
EQUIP	EQUIPMENT	RTU	ROOF TOP UNIT
ESE	EMERGENCY SHOWER/EYEWASH	RV	RELIEF VALVE
EST	EXTERNAL STATIC PRESSURE	RVT	ROOF VENT TERMINATION
EWBT	ENTERING WET BULB	SK	SINK
TEMPERATURE	TEMPERATURE	SA	SUPPLY AIR
EWC	ELECTRIC WATER COOLER	SH	SHOWER
EWT	ENTERING WATER	SO	STORM OVERFLOW
TEMPERATURE	TEMPERATURE	ST	STORM
EX	EXISTING	TCC	TEMPERATURE CONTROL
EXH	EXHAUST	TYP	TYPICAL
EXP	EXPANSION	UH	UNIT HEATER
FAI	FRESH AIR INTAKE	UR	URINAL
FAN COIL UNIT	FAN COIL UNIT	UV	UNIT VENTILATOR
FD	FLOOR DRAIN	VA	VENTILATION AIR
FDC	FIRE DEPARTMENT CONNECTION	VTR	VENT THROUGH ROOF
FLEX	FLEXIBLE	WB	WALL BOX - CONDENSATE
FLR	FLOOR	WC	WATER CLOSET
FPM	FEET PER MINUTE	WH	WATER HAMMER ARRESTOR
FPS	FEET PER SECOND	WH	WATER HEATER
FS	FLOOR SINK		
FSEC	FOOD SERVICE EQUIPMENT CONSULTANT		

PIPE FITTINGS

SINGLE LINE	DOUBLE LINE
ELBOW	ELBOW
ELBOW - DOUBLE BRANCH	ELBOW - DOUBLE BRANCH
ELBOW - OUTLET DOWN	ELBOW - OUTLET DOWN
ELBOW - OUTLET UP	ELBOW - OUTLET UP
ELBOW - LONG RADIUS	ELBOW - LONG RADIUS
ELBOW - SHORT RADIUS	ELBOW - SHORT RADIUS
45° ELBOW	45° ELBOW
TEE - VENT	TEE - VENT
TEE - SANITARY	TEE - SANITARY
TEE - OUTLET DOWN	TEE - OUTLET DOWN
TEE - OUTLET UP	TEE - OUTLET UP
TEE - SIDE OUTLET DOWN	TEE - SIDE OUTLET DOWN
TEE - SIDE OUTLET UP	TEE - SIDE OUTLET UP
CROSS - VENT	CROSS - VENT
CROSS - SANITARY	CROSS - SANITARY
LATERAL	LATERAL
TEE - SINGLE SWEEP "COMBO WYE"	TEE - SINGLE SWEEP "COMBO WYE"
REDUCER - CONCENTRIC	REDUCER - CONCENTRIC
REDUCER - ECCENTRIC	REDUCER - ECCENTRIC
CAPPED CONNECTION	CAPPED CONNECTION
FLANGED CONNECTION	FLANGED CONNECTION

NOTE: ALL SYMBOLS MAY NOT APPLY TO THIS PROJECT

GENERAL SYMBOLS

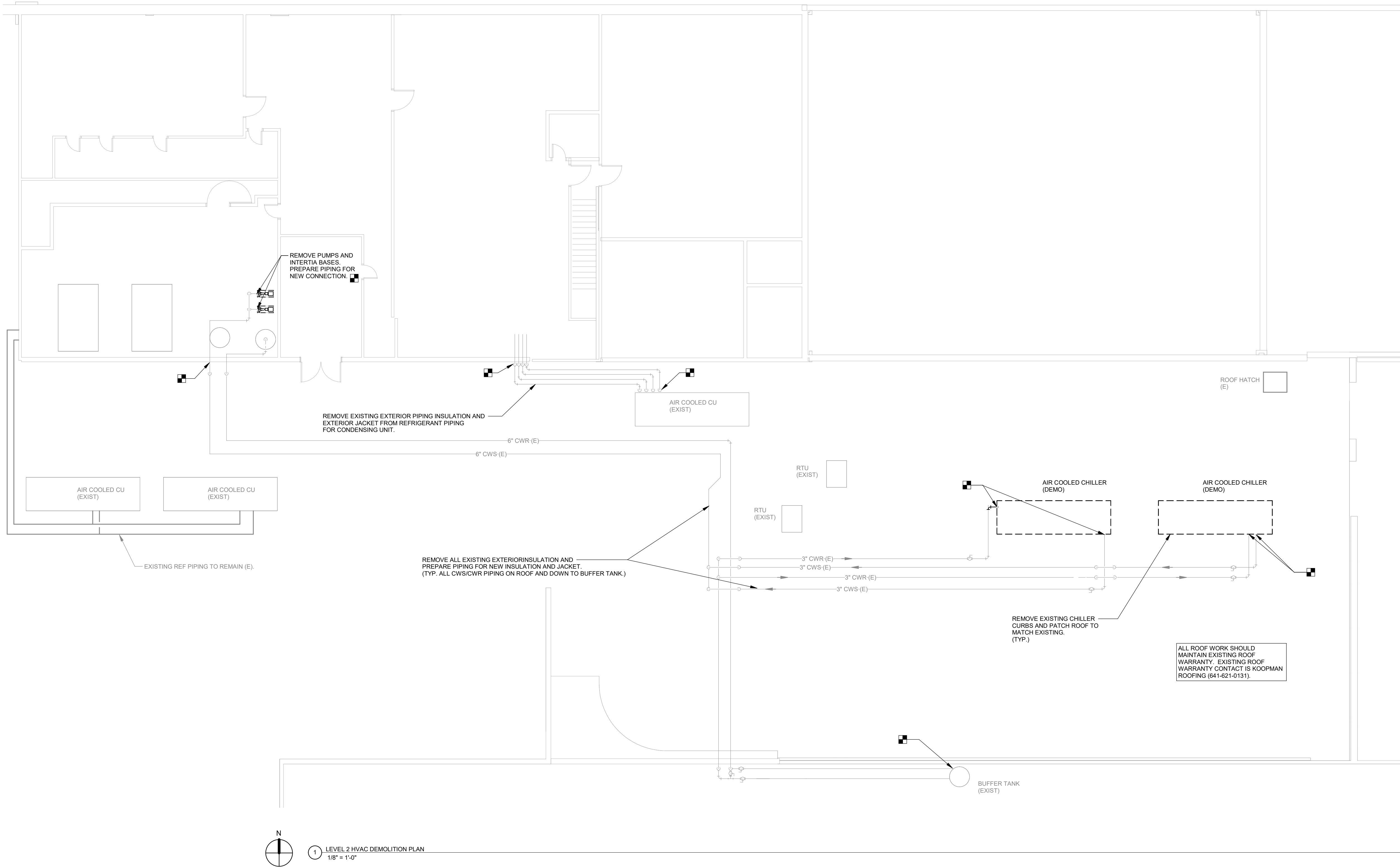
	EXISTING = HALFTONE LINEWORK
	NEW = DARK LINEWORK
	DEMO = DASHED DARK LINEWORK
	BELOW GRADE = LONG DASHED DARK LINEWORK
	NEW CONNECTION POINT
	POINT OF DISCONNECT
	KEYNOTE
	EQUIPMENT IDENTIFICATION TAG
	DETAIL DRAWING REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE SHEET REFERENCE
	SECTION CUT REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE SHEET REFERENCE
	INTERIOR ELEVATION DRAWING REFERENCE TAG

PIPING LEGEND - MECHANICAL

CWR		CHILLED WATER RETURN
CWS		CHILLED WATER SUPPLY
CD		CONDENSATE DRAIN
PC		PUMPED CONDENSATE
CR		CONDENSER WATER RETURN
CS		CONDENSER WATER SUPPLY
EA		EXHAUST PIPE - PVC
HCR		HOT/CHILLED WATER RETURN
HCS		HOT/CHILLED WATER SUPPLY
HWR		HYDRONIC RETURN
HWS		HYDRONIC SUPPLY
LWR		LOOP WATER RETURN
LWS		LOOP WATER SUPPLY
RS		REFRIGERANT GAS
RHG		REFRIGERANT HOT GAS
RL		REFRIGERANT LIQUID

GENERAL NOTES:

- A. REFER TO M000 FOR GENERAL NOTES & SYMBOLS.
B. REFER TO M301 FOR MECHANICAL DETAILS AND CONTROLS.



DAS IPBS
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DOCUMENTS

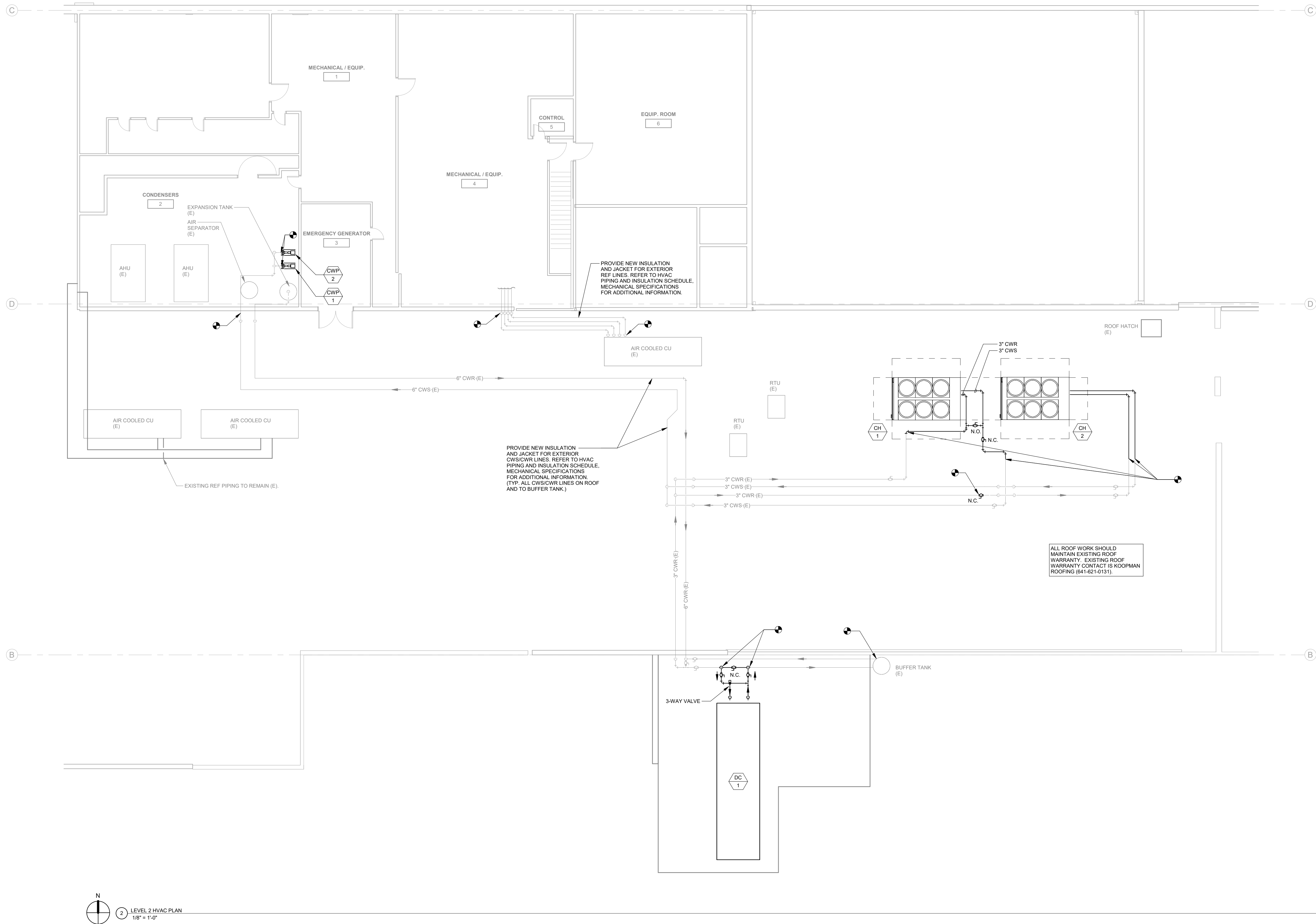
#	Revision	Date

Drawing Name:
FLOOR PLAN HVAC
DEMOLITION

Drawing #:
MD101

GENERAL NOTES:

- A. REFER TO M000 FOR GENERAL NOTES & SYMBOLS.
B. REFER TO M301 FOR MECHANICAL DETAILS AND CONTROLS.



N
2 LEVEL 2 HVAC PLAN
1/8" = 1'-0"

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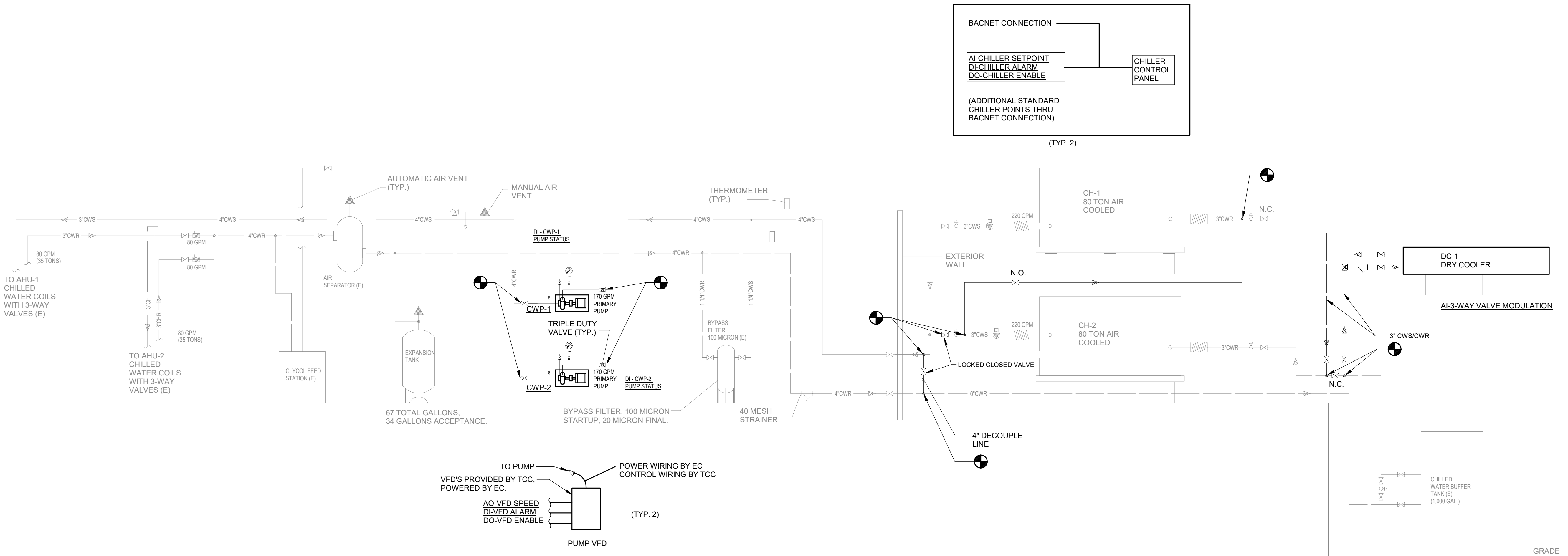
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DOCUMENTS

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Drawing Name:
FLOOR PLAN HVAC

Drawing #:
M101



CHILLER WATER PUMP OPERATION:

WHEN THE COOLING SYSTEM IS MANUALLY ENABLED AT THE DDC, THE CHILLED WATER PUMP SHALL BE ENABLED AND SHALL RUN CONTINUOUSLY. PUMP SPEED SHALL BE ESTABLISHED BY THE TAB CONTRACTOR. SYSTEM HAS FULLY REDUNDANT CHILLERS/PRIMARY PUMPS THAT SHOULD BE USED IN ALTERNATING SCHEDULE DETERMINED BY THE OWNER.

CHILLER OPERATION:

THE CHILLER SHALL BE CONTROLLED BY THE LOCAL CONTROLLER. THE CHILLER CONTROLLER WILL MODULATE AND ADJUST COMPRESSOR STAGING, CONDENSER FAN OPERATION, HOT GAS BYPASS CONTROL TO ACHIEVE CHILLED WATER SUPPLY SETPOINT, THE DRY COOLER WILL BE CONTROLLED BY THE DDC. WHEN THE COOLING SYSTEM IS MANUALLY ENABLED AT THE DDC, THE FOLLOWING SEQUENCE WILL OCCUR:

- CHILLED WATER PUMP WILL START
- CHILLED WATER FLOW SWITCH WILL BE SET
- CHILLED WATER SETPOINT WILL BE SET TO 44F (ADJ.).
- AFTER A 10 MIN. WAIT, CHILLER WILL BE ENABLED.

WHEN THE COOLING SYSTEM IS MANUALLY DISABLED AT THE DDC, THE FOLLOWING SEQUENCE WILL OCCUR:

- AFTER A 10 MIN. WAIT, CHILLER WILL BE DISABLED.
- AFTER A 20 MIN. WAIT, CHILLED WATER PUMP TO BE STOPPED.

ADDITIONAL COOLING MODE:

- IF CHILLED WATER SETPOINT IS NOT ABLE TO BE MAINTAINED FOR 20 MIN. (ADJ.) WITH ENABLED CHILLER FULLY LOADED, THEN REDUNDANT CHILLER SHALL BE ENABLED AND BOTH CHILLERS SHALL MODULATE TO MAINTAIN SETPOINT. AFTER CHILLED WATER SETPOINT HAS BEEN MAINTAINED FOR 30 MIN., REDUNDANT CHILLER SHALL BE DISABLED AND RETURN TO ALTERNATING SCHEDULE.

LOW TEMPERATURE OPERATION:

- IF O.A. TEMP RISES ABOVE 28F (ADJ.) FOR 1 HOUR (ADJ.), THEN DRY COOLER 3-WAY VALVE AND FANS SHALL MODULATE TO MAINTAIN SETPOINT.

WHEN O.A. TEMP RISES ABOVE 28F (ADJ.) FOR 1 HOUR (ADJ.), MODULATE 3-WAY VALVE BETWEEN BYPASS AND FULL FLOW THROUGH DRY COOLER AS REQUIRED TO MAINTAIN SETPOINT.

EXISTING BUFFER TANK BYPASS VALVE CONTROL. PROVIDE ABILITY ON USER INTERFACE TO MANUALLY OPEN BYPASS VALVE FOR BUFFER TANK. NORMAL OPERATION IS TO HAVE CLOSED.

EXISTING ISOLATION CONTROL VALVES SHALL REMAIN AND BE USED AS NEEDED TO ISOLATE EACH CHILLER IF SERVICE IS NEEDED. CHILLERS CAN ALSO BE ISOLATED MANUALLY VIA MANUAL VALVES.

TRENDS

ALL POINTS SHALL BE HISTORICALLY TRENDED. TREND POINTS EVERY 15 MIN OVER A 365 DAY PERIOD OF TIME.

FLOW METER SHOWN SHALL BE USED TO VERIFY FLOW AND CALCULATE APPROXIMATE CURRENT TONNAGE ON USER INTERFACE.

ALARMS AND INTERLOCK SAFETIES:

THE FOLLOWING SHALL SHUT DOWN THE ENABLED CHILLER AND PUMP AND SHALL INDICATE AN ALARM CONDITION. DDC SHALL ENABLE REDUNDANT CHILLER AND PUMP:

- PUMP STATUS CAN NOT BE VERIFIED WITH CURRENT RELAY (AUTO RESET)
- FLOW SWITCH CAN NOT BE VERIFIED (AUTO RESET)

THE FOLLOWING SHALL DISABLE THE ENABLED PUMP AND SHALL INDICATE AN ALARM CONDITION. DDC SHALL ENABLE REDUNDANT PUMP.

- PUMP STATUS CAN NOT BE VERIFIED WITH CURRENT RELAY (AUTO RESET)

ALARMS

THE FOLLOWING SHALL INDICATE AN ALARM CONDITION:

- A GENERAL VFD ALARM
- A GENERAL CHILLER ALARM
- CHILLED WATER SUPPLY TEMPERATURE (S > OR < 5°F FROM SETPOINT FOR MORE THAN 10 MIN.

COOLING SYSTEM REPORT GENERATION:

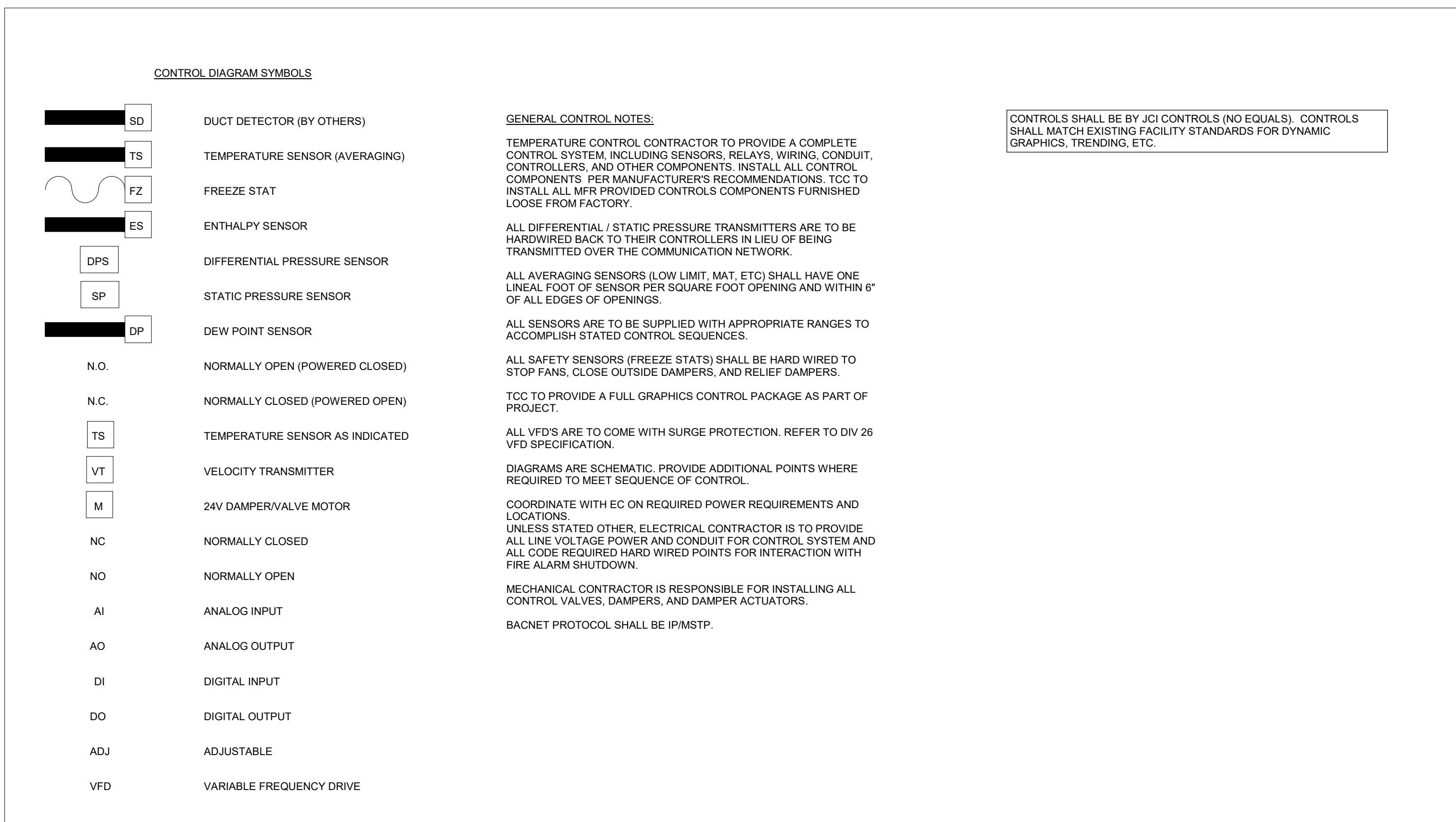
BAS SHALL MONITOR THE FOLLOWING POINT ON 5 MIN. (ADJ.) INTERVALS WITH SIGNAL TREND. THE TREND SHALL RUN FOR A 365 DAY (ADJ.) DURATION AT WHICH POINT THE NEWEST VALUES SHALL OVERWRITE THE OLDEST VALUES:

- DATE
- TIME
- GLOBAL OUTSIDE AIR TEMP. (F)
- SYSTEM CHILLED WATER SUPPLY TEMP (F)
- SYSTEM CHILLED WATER SUPPLY TEMP SETPOINT (F)
- SYSTEM CHILLED WATER RETURN TEMP (F)
- SYSTEM CHILLED WATER FLOW RATE (GPM)
- COOLING SYSTEM LOAD (TONS)
- OPERATIONAL STATUS OF CHILLER, CHILLED WATER PUMP.

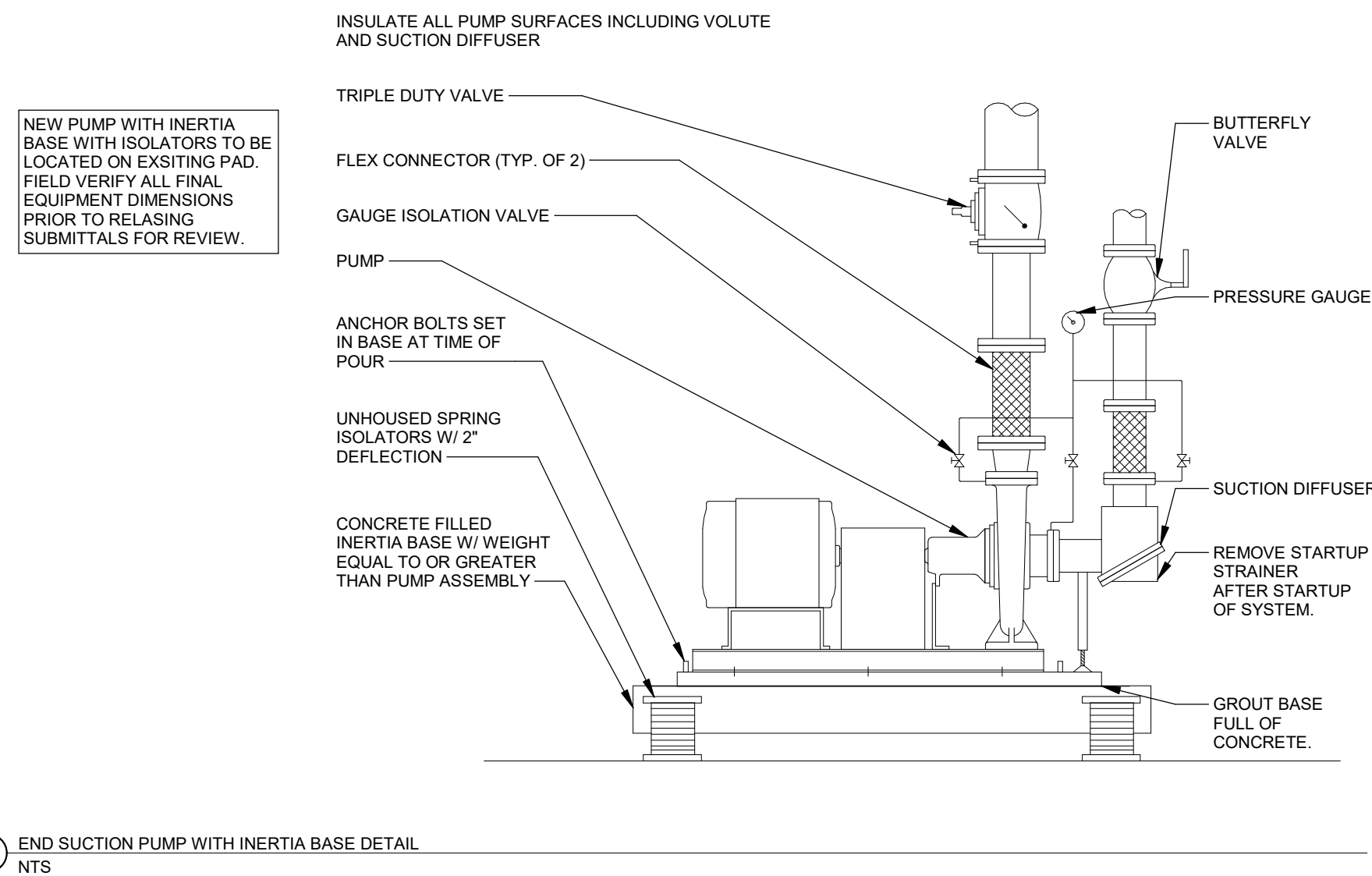
THIS INFORMATION SHALL BE ACCESSIBLE TO VIEW IN NEITHER TABULAR OR GRAPHICAL FORM ON THE BAS.

ONCE PER MONTH THE BAS SHALL RECORDED THE LARGEST COOLING SYSTEM LOAD (IN TONS) WHICH OCCURRED DURING THAT MONTH. THE DATE, TIME, OUTSIDE AIR TEMPERATURE, CHILLED WATER SUPPLY AND RETURN TEMPERATURES WHICH COINCIDED WITH THAT EVENT SHALL ALSO BE RECORDED. THIS INFORMATION SHALL BE STORED TO A MEMORY LOCATION ON THE BAS OPERATOR INTERFACE THAT IS MAINTAINED (NOT AUTOMATICALLY OVERWRITTEN).

1 CHILLED WATER SYSTEM PIPING AND CONTROLS DIAGRAM
NOT TO SCALE



2 CONTROL DIAGRAM GENERAL NOTES & SYMBOLS
NTS



3 END SUCTION PUMP WITH INERTIA BASE DETAIL
NTS

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MECHANICAL DETAILS

Drawing #:

M301

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#	Revision	Date

Drawing Name:
MECHANICAL SCHEDULES

Drawing #:
M501

HVAC PIPING AND INSULATION SCHEDULE

SYSTEM	PIPE SIZE (INCHES)	PIPE MATERIAL (NOTE 1)	JOINT TYPE (NOTE 1)	SHUT-OFF VALVE TYPE (NOTE 4)	INSULATION TYPE (NOTE 2,3)	INSULATION THICKNESS (INCHES)	JACKET (NOTE 5)
CHILLED WATER - INTERIOR	2 1/2 - 10	SCHED. 40 STEEL	GROOVED OR WELDED	DUCTILE IRON,BUTTERFLY	ELASTOMERIC	2	PVC
CHILLED WATER - EXTERIOR	2 1/2 - 10	SCHED. 40 STEEL	GROOVED OR WELDED	DUCTILE IRON,BUTTERFLY	ELASTOMERIC	3	ALUMINUM
REFRIGERANT PIPING - EXTERIOR	FIELD VERIFY	N/A	N/A	N/A	ELASTOMERIC	1 1/2	ALUMINUM

- NOTES:
1. REFER TO SPECIFICATIONS FOR FURTHER PIPE MATERIAL, JOINT AND INSTALLATION REQUIREMENTS. PUSH TO CONNECT / PUSH ON TYPE CONNECTIONS ARE NOT ALLOWED.
2. REFER TO SPECIFICATIONS FOR FURTHER INSULATION REQUIREMENTS. INSULATION R-VALUE SHALL MEET ENERGY CODE REQUIREMENTS.
3. INSULATION APPLIED TO PIPING LOCATED IN RETURN AIR PLENUMS SHALL MEET ASTM E84 25/50 FLAME AND SMOKE SPREAD RATING, AND COMPLY WITH NFPA STANDARD 90A.
4. REFER TO SPECIFICATIONS FOR FURTHER VALVE REQUIREMENTS.
5. EXPOSED PIPING MOUNTED BELOW 6'-0" ABOVE FLOOR SHALL HAVE PVC AND EXTERIOR PIPING SHALL HAVE ALUMINUM JACKET.

CHILLER SCHEDULE

REFERENCE	CH-1 & CH-2
MANUFACTURER	TRANE
MODEL #	CGAM
TYPE (AIR COOLED)	AIR COOLED SCROLL
SERVES	MASTER CONTROLS
OPERATING WEIGHT (LBS)	5,700
DIMENSIONS - L x W x H (INCHES)	146 X 89 X 93
NOMINAL CAPACITY (TON)	80
NET COOLING CAPACITY (TON)	72
FULL LOAD EFFICIENCY (EER)	10.1
IPLV/IP (BTU/W-H)	18
REFRIGERANT	R454B
REFRIGERANT CHARGE (LBS)	134
EVAPORATOR FLUID	50% PROP. GLYCOL
EVAPORATOR FLOW (GPM)	170
EVAPORATOR ENT. TEMP. (°F)	52
EVAPORATOR LVG. TEMP. (°F)	40
EVAP. PRESS. DROP (FT HD)	18.00
CONDENSER AMBIENT TEMP. (°F)	95
NUMBER OF CIRCUITS	2
NUMBER OF COMPRESSORS	4
CAPACITY STEPS	4
ELECTRICAL DATA	
VOLTAGE / PHASE	460/3
TOTAL UNIT POWER (KW)	85.50
SINGLE POINT MCA	163
SINGLE POINT MOCp	200
STARTER TYPE	ACROSS THE LINE
NOTES	1 THROUGH 4

- NOTES:
1. UNIT PROVIDED WITH FACTORY INSTALLED FREEZE PROTECTION.
2. PROVIDE WITH SINGLE POINT POWER & NON-FUSED DISCONNECT.
3. UNIT TO HAVE LOW AMBIENT OPERATION CABILITIES TO OPERATE DOWN TO -20F.
4. PROVIDE INTERIA BASE FRAME.

DRY COOLER SCHEDULE

REFERENCE	DC-1
MANUFACTURER	KRACK
MODEL #	FEVF 26412
SERVES	CHILLED WATER
WEIGHT (LBS)	5,400
DIMENSIONS - L x W x H (INCHES)	330 x 90 x 64
INTERNAL VOLUME (GAL)	72
FLUID TYPE	50% PROP. GLYCOL
TOTAL CAPACITY (MBH)	850
FLOW RATE (GPM)	170
EWt (°F)	52
LWT (°F)	40
AMBIENT AIR TEMP (°F)	30
AIR FLOW (CFM)	123,000
AIR VELOCITY (FPM)	645
PRESSURE DROP (FT HD)	9
FAN QTY. / RPM	12 / 1140
ELECTRICAL DATA	
MOTOR HP	1.5
VOLTAGE - PH	480 / 3
MCA	32.1
MOP	40.0
NOTES	1 THROUGH 4

- NOTES:
1. SEE CONTROL DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE SINGLE POINT CONNECTION WITH INTEGRAL NON-FUSED DISCONNECT AND 22" HEIGHT SUPPORT LEGS.
3. UNIT SOUND IS 83 DB.
4. INTENT IS FOR DRY COOLER TO HANDLE CHILLED WATER COOLING LOAD BELOW 30F TO INCREASE EFFICIENCY AND REDUCE MECHANICAL COOLING.

PUMP SCHEDULE

REFERENCE	CWP-1 & CWP-2
MANUFACTURER	TACO
MODEL #	F12506D
TYPE	END SUCTION
SERVES	CHILLED WATER
WEIGHT (LBS)	450
DIMENSIONS - L x W x H (INCHES)	40 x 16 x 20
FLOW RATE (GPM)	170
OPERATING PRESSURE (FT. HEAD)	130
IMPELLER DIAMETER (INCH)	5.80
IMPELLER DIAMETER RANGE (INCH)	4 - 6.25
PUMP EFFICIENCY %	74%
ELECTRICAL DATA	
MOTOR HP	10
BHP	8.0
RPM	3,500
VOLTAGE - PH	480 - 3
NOTES	1 THROUGH 5

- NOTES:
1. REFER TO CONTROL DRAWINGS.
2. TCC TO PROVIDE VFD'S WITH INTEGRAL DISCONNECT. VFD'S INSTALLED BY EC.
3. MOTORS TO BE SUITABLE FOR OPERATION WITH VARIABLE FREQUENCY DRIVE (VFD).
4. PROVIDE WITH SHAFT GROUNDING KITS.
5. BASE MOUNTED PUMP, PROVIDE INERTIA PAD.

CONTRACTOR SHALL PROVIDE GLYCOL ANALYSIS AND FREEZE PROTECTION VERIFICATION AT STARTUP. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

#	Revision	Date

Drawing Name:
ELECTRICAL GENERAL
NOTES, SYMBOLS,
AND DEMO PLAN

Drawing #:

E000

GENERAL SYMBOLS	
	CONDUIT SLEEVE
	JUNCTION BOX, CEILING OR FLOOR MOUNTED.
	JUNCTION BOX, WALL MOUNTED, ELEVATION AS NOTED.
	KEYNOTE
	EQUIPMENT IDENTIFICATION TAG. REFER TO EQUIPMENT CONNECTION SCHEDULE
	DETAIL DRAWING REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE SHEET REFERENCE
	SECTION CUT REFERENCE TAG, SIM-SIMILAR, TYP-TYPICAL, OPP-OPPOSITE SHEET REFERENCE
	INTERIOR ELEVATION DRAWING REFERENCE TAG
	DRAWINGS REVISION. REFER TO TITLEBLOCK FOR REVISION NAME AND DATE

POWER SYMBOLS	
	DUPLEX RECEPTACLE, WALL MOUNTED, TAMPER-RESISTANT
	DUPLEX GFCI RECEPTACLE, TAMPER-RESISTANT, WALL MOUNT. "G" INDICATES PROTECTION INCLUDED IN DEVICE. SHADING INDICATES DEVICE PROTECTED BY EITHER UPSTREAM GFCI DEVICE OR CIRCUIT BREAKER
	DUPLEX GFCI WEATHER RESISTANT RECEPTACLE WITH WEATHER-PROOF IN-USE COVER, TAMPER-RESISTANT, WALL MOUNT
	EQUIPMENT CONNECTION. REFER TO EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE. REFER TO PANEL SCHEDULES FOR GFCI PROTECTION WHERE REQUIRED
	MOTOR CONNECTION. REFER TO EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE. REFER TO PANEL SCHEDULES FOR GFCI PROTECTION WHERE REQUIRED
	EQUIPMENT CONNECTION, WALL MOUNT. REFER TO EQUIPMENT CONNECTION SCHEDULE FOR CONNECTION TYPE. REFER TO PANEL SCHEDULES FOR GFCI PROTECTION WHERE REQUIRED
	SAFETY DISCONNECT SWITCH
	VFD
	VFD WITH INTEGRAL DISCONNECT
	EMERGENCY PUSH BUTTON
	PANELBOARD - SURFACE MOUNTED
	PANELBOARD - RECESSED IN WALL
	DISTRIBUTION PANELBOARD/SWITCHBOARD - SURFACE MOUNTED AS NOTED.

ELECTRICAL ABBREVIATIONS			
A	DEVICE MOUNTED +8" ABOVE COUNTER TOP (VERIFY LOCATION)	NM	NONMETALLIC
AFF	ABOVE FINISHED FLOOR	NTS	NOT TO SCALE
ATS	AUTOMATIC TRANSFER SWITCH	OC	ON CENTER
C	CEILING	OCFI	OWNER FURNISHED CONTRACTOR - INSTALLED
CB	CIRCUIT BREAKER	OFOI	OWNER FURNISHED, ELECTRICAL CONTRACTOR
CT	CURRENT TRANSFORMER	RR	EXISTING ITEM TO BE REMOVED AND RELOCATED
E	EXISTING ITEM TO REMAIN	RN	EXISTING ITEM TO BE REMOVED AND REPLACED WITH NEW
EC	ELECTRICAL CONTRACTOR	SCCR	SHORT CIRCUIT CURRENT RATING
EM	EMERGENCY LIGHT FIXTURE	T	TAMPER PROOF DEVICE
ER	NEW LOCATION OF EXISTING ITEM	TV	TELEVISION
F	ROUGH IN FOR FUTURE DEVICE	UPS	UNINTERRUPTIBLE POWER SUPPLY
FAAP	FIRE ALARM ANNUNCIATOR PANEL	V	VOLTS
FACP	FIRE ALARM CONTROL PANEL	VA	VOLT-AMPERES
FSD	FIRE SMOKE DAMPER	WG	WIREGUARD COVER
G	GROUND FAULT CIRCUIT INTERRUPTER	WP	WEATHERPROOF DEVICE
GND	GROUND	WR	WEATHER RESISTANT DEVICE
KVA	KILO-VOLT-AMPERES	XFR	TRANSFORMER
KW	KILOWATTS	+24"	INDICATES MOUNTING HEIGHT CENTER LINE OF DEVICE TO FINISHED FLOOR
MC	MECHANICAL CONTRACTOR		
MCB	MAIN CIRCUIT BREAKER		
MDP	MAIN DISTRIBUTION PANEL		
MLO	MAIN LUGS ONLY		
N	NEW DEVICE IN EXISTING LOCATION		
NIC	NOT IN CONTRACT		

GENERAL NOTES - ELECTRICAL

- COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. BEGIN INSTALLATION AND ROUGH-IN ONLY AFTER PROPER AND TIMELY COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION IS COMPLETE. COORDINATE WITH BUILDING STRUCTURE, ARCHITECTURE, MECHANICAL SHEET METAL, ALL PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, EQUIPMENT ACCESS/CLEARANCE, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT. CONTRACTOR IS RESPONSIBLE FOR REWORK OF INSTALLED EQUIPMENT RESULTING FROM INSUFFICIENT COORDINATION.
- ELECTRICAL DRAWINGS ARE ONLY A PORTION OF THE COMPLETE SET OF PLANS AND CONTRACT DOCUMENTS. THE ELECTRICAL SCOPE OF WORK IS DEFINED BY THE COMPLETE SET OF CONTRACT DOCUMENTS. THIS INCLUDES BUT IS NOT LIMITED TO REFERENCING ARCHITECTURAL PLANS FOR DIMENSIONS AND DETAILS. EQUIPMENT PLANS FOR ROUGH-IN REQUIREMENTS, MECHANICAL PLANS FOR EQUIPMENT SIZES AND LOCATIONS.

INSTALLATION NOTES - ELECTRICAL

- INCREASE CONDUCTOR SIZES ON 20A 120V-1 PHASE CIRCUITS EXCEEDING 100 FEET TO CENTER OF LOAD TO ACCOUNT FOR VOLTAGE DROP.
- RACEWAYS AND BOXES ARE SHOWN DIAGRAMMATICALLY ONLY AND INDICATE GENERAL AND APPROXIMATE LOCATIONS. LAYOUTS DO NOT ALWAYS SHOW THE TOTAL NUMBER OF RACEWAYS OR BOXES FOR THE CIRCUITS REQUIRED. NOR ARE THE LOCATIONS OF INDICATED RUNS INTENDED TO SHOW THE ACTUAL ROUTING OF THE RACEWAYS.
- PROVIDE A DEDICATED GREEN INSULATED GROUND CONDUCTOR TO ALL DEVICES. DO NOT USE CONDUIT SYSTEM AS THE ONLY EQUIPMENT GROUNDING METHOD.
- CONTRACTOR IS RESPONSIBLE FOR OPENINGS IN WALLS, FLOORS, CEILINGS, AND ROOFS THAT ARE REQUIRED TO COMPLETE THEIR SCOPE OF WORK. SEAL PENETRATIONS IN ACCORDANCE WITH THE RATING OF THE AFFECTED ASSEMBLY. REFER TO ARCHITECTURAL CODE PLAN FOR RATED WALLS, FLOORS, AND CEILINGS.

CODE NOTES - ELECTRICAL

- PROVIDE ELECTRICAL INSTALLATION IN ACCORDANCE WITH ALL STATE CODES.
- THE CURRENT ADOPTED EDITION OF THE ELECTRICAL CODE IS THE STANDARD FOR THE ELECTRICAL INSTALLATION. VERIFY WITH LOCAL OFFICIALS WHEN PERMITS ARE OBTAINED. NOTIFY DESIGN TEAM OF ANY DISCREPANCIES BETWEEN THE PROJECT MANUAL OR DRAWINGS AND THE GOVERNING CODE.
- PER NEC EVERY CIRCUIT AND CIRCUIT MODIFICATION SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT AND SPECIFIC PURPOSE OR USE. CONTRACTOR TO PROVIDE FINAL CIRCUIT IDENTIFICATION FOR ALL NEW AND MODIFIED CIRCUITS AT PROJECT COMPLETION.

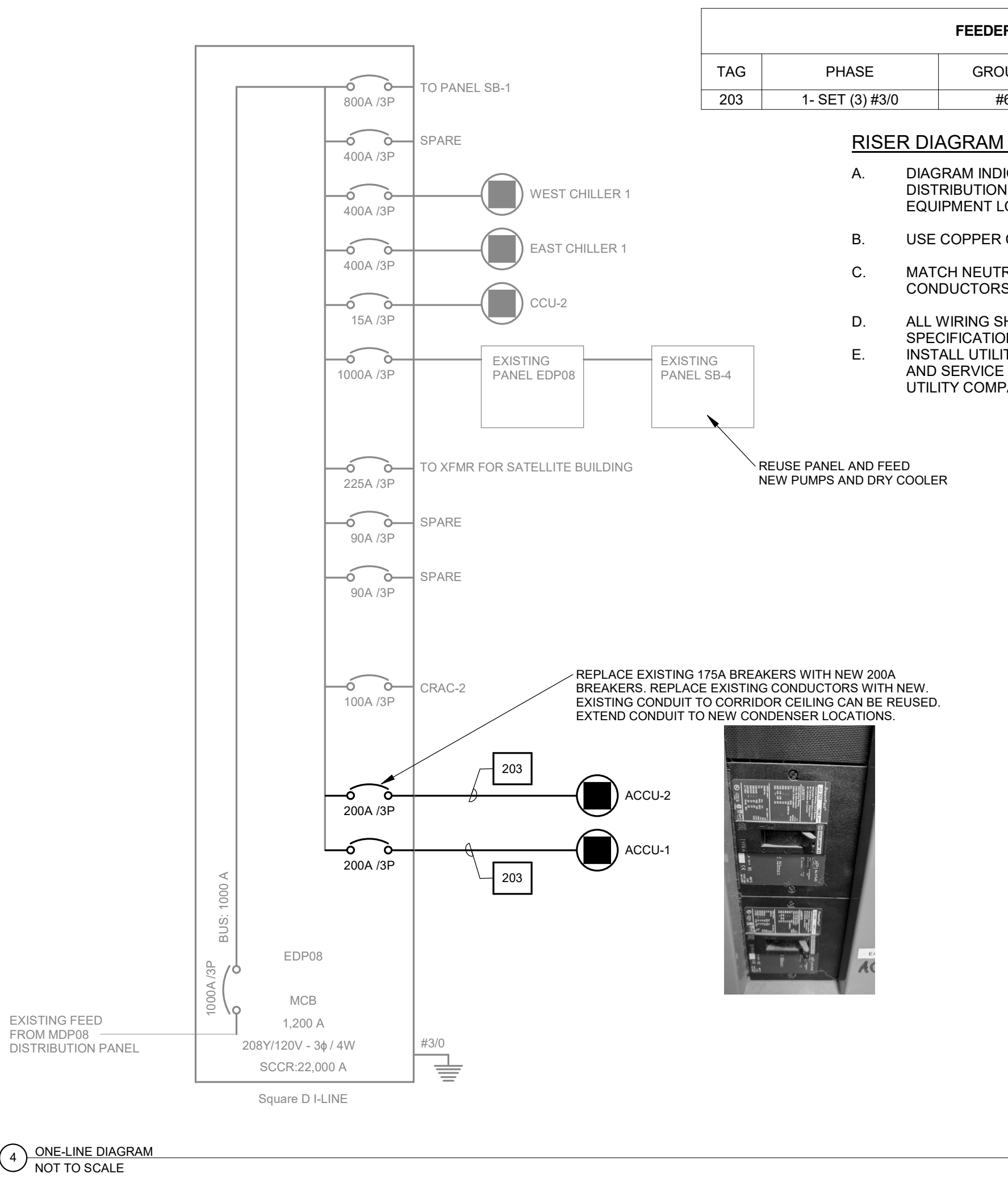
ELECTRICAL DEMOLITION NOTES

- DEMOLITION DRAWINGS PRESENT LAYOUT OF EXISTING CONDITIONS AND MAJOR MECHANICAL/ELECTRICAL ITEMS. FIELD VERIFY EXISTING CONDITIONS AND BECOME FAMILIAR WITH EXISTING ELECTRICAL SYSTEM AND DEMOLITION SCOPE BEFORE WORK BEGINS.
- ADDITIONAL COMPONENTS MAY EXIST WHICH ARE NOT SHOWN. HANDLE SUCH ITEMS IN A MANNER SIMILAR TO THOSE ITEMS WHICH ARE SHOWN.
- REMOVE ELECTRICAL FACILITIES AND CLEAR THE AREA TO RECEIVE THE NEW WORK.
 - REMOVE ALL CONDUIT, WIRE, BOXES, ETC., AS REQUIRED BY WALL AND CEILING DEMOLITION.
 - IDENTIFY THE LOCATION OR ITEMS SERVED FOR ALL DISCONNECTED BRANCH CIRCUITS BEFORE DEMOLITION. MAINTAIN CIRCUITS SERVING AREAS BEYOND THE DEMOLITION AREA.
 - REMOVE AND REINSTALL CEILING TILES AS REQUIRED TO REMOVE THE ELECTRICAL FACILITIES NOTED. REPLACE CEILINGS TILES DAMAGED DURING DEMOLITION.
 - KEEP EXISTING SYSTEMS OPERATIONAL DURING ALL PHASES OF CONSTRUCTION UNLESS NECESSARY FOR DEMOLITION.
 - OBTAIN OWNER'S PERMISSION TO SHUT OFF SERVICES OR SYSTEMS WHICH MAY AFFECT OTHER AREAS BEYOND DEMOLITION AREA. INFORM OWNER AS TO THE REASON FOR AND THE DURATION OF THE SHUTDOWN.
 - REPAIR AT CONTRACTORS EXPENSE ANY DAMAGED CONDUIT OR WIRE NOT IDENTIFIED FOR DEMOLITION.
 - INSTALL BLANK COVERPLATES/COVERS OVER OPENINGS AT REMOVED DEVICE LOCATIONS.
- ALL WIRING FOR REMODELED AREAS SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE.
- PROTECT EXISTING DEVICES IDENTIFIED TO REMAIN OR BE RELOCATED. IF AN EXISTING DEVICE CANNOT BE REINSTALLED NOTIFY DESIGN TEAM DURING DEMOLITION. REPLACE FUNCTIONING ITEMS DAMAGED DURING DEMOLITION.
- REMOVED/DEMOLISHED EQUIPMENT REMAINS THE PROPERTY OF THE OWNER UNLESS OTHERWISE NOTED. VERIFY OWNERS SALVAGE SELECTIONS AND DISPOSE ALL OTHER MATERIALS.
- PLAN ABBREVIATIONS:
 - E - EXISTING ITEM TO REMAIN
 - ER - NEW LOCATION OF EXISTING ITEM
 - N - NEW ITEM IN EXISTING LOCATION
 - R - EXISTING ITEM TO BE REMOVED, PATCH AND/OR COVER
 - RN - REPLACE EXISTING WITH NEW
 - RR - EXISTING ITEM TO BE REMOVED AND RELOCATED

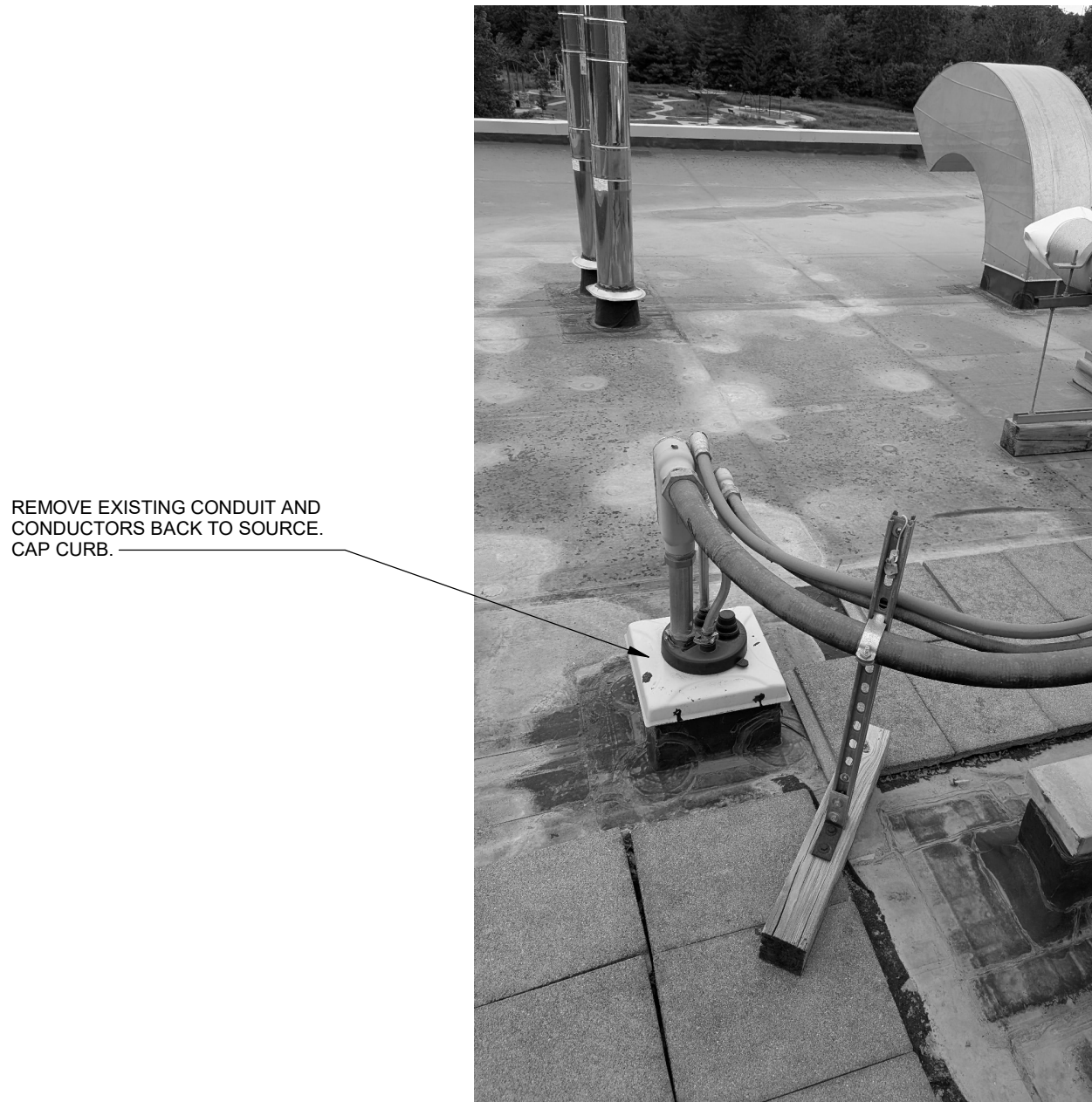
FEEDER SCHEDULE				
TAG	PHASE	GROUND	CONDUCTOR MATERIAL	CONDUIT
203	1-SET (3) #3/0	#6	COPPER	(1) 2"

RISER DIAGRAM GENERAL NOTES

- DIAGRAM INDICATES OVERALL LAYOUT OF ELECTRICAL DISTRIBUTION SYSTEM. REFER TO FLOOR PLANS FOR EQUIPMENT LOCATIONS.
- USE COPPER CONDUCTORS UNLESS OTHERWISE INDICATED.
- MATCH NEUTRAL CONDUCTOR SIZE TO THE PHASE CONDUCTORS UNLESS OTHERWISE NOTED.
- ALL WIRING SHALL BE IN RACEWAY AS NOTED. REFER TO SPECIFICATIONS FOR CONDUIT APPLICATION REQUIREMENTS.
- INSTALL UTILITY TRANSFORMER PAD, METERING EQUIPMENT, AND SERVICE ENTRANCE FEEDERS IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS.



4 ONE-LINE DIAGRAM
NOT TO SCALE



3 CURB BOOT
NOT TO SCALE

1 Level 2 POWER DEMO PLAN
1/8" = 1'-0"

Project No: 9525.00

Date: 07/06/2026

CONSTRUCTION
DOCUMENTS

#	Revision	Date

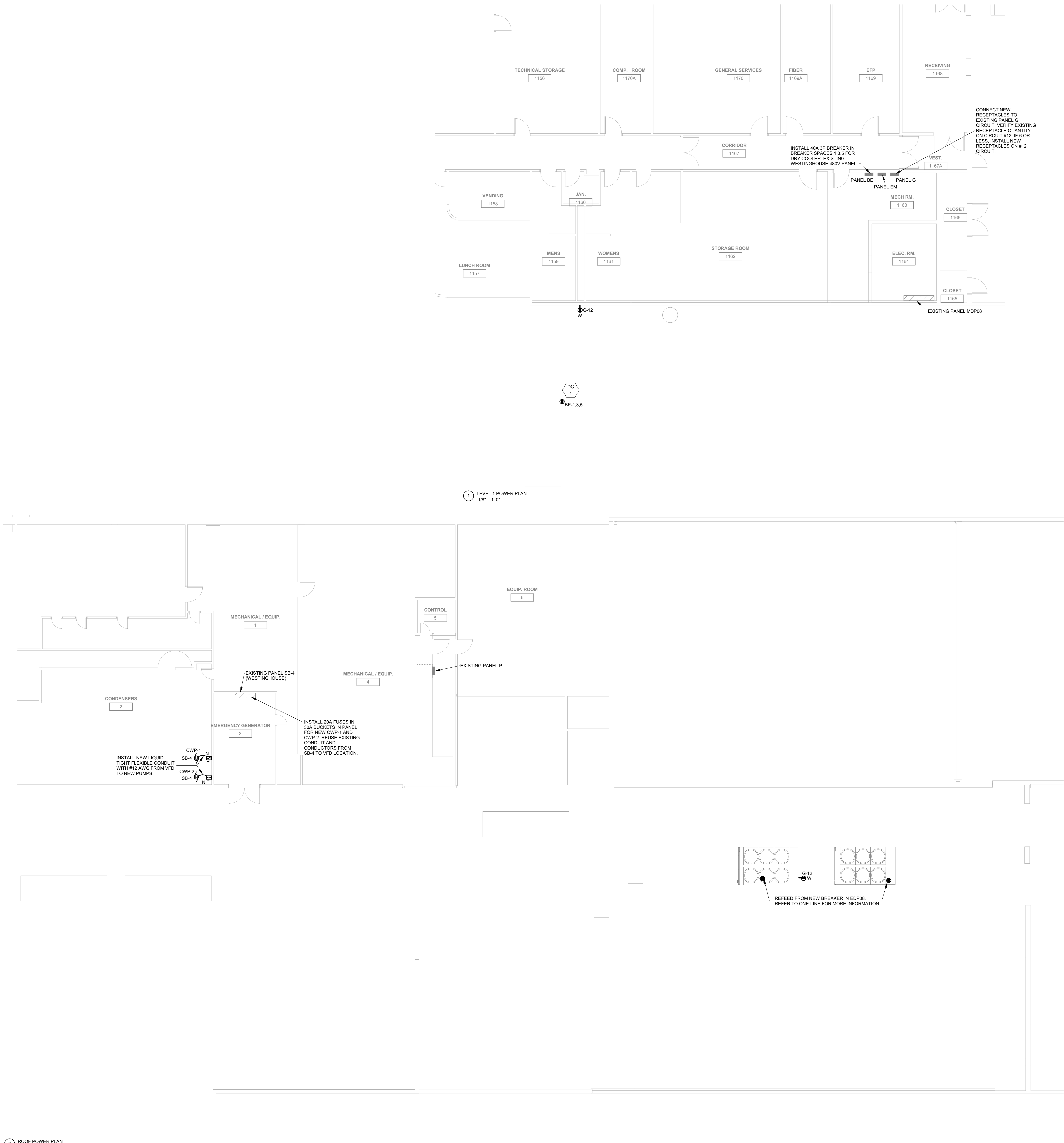
Drawing Name:
ELECTRICAL POWER

Drawing #:

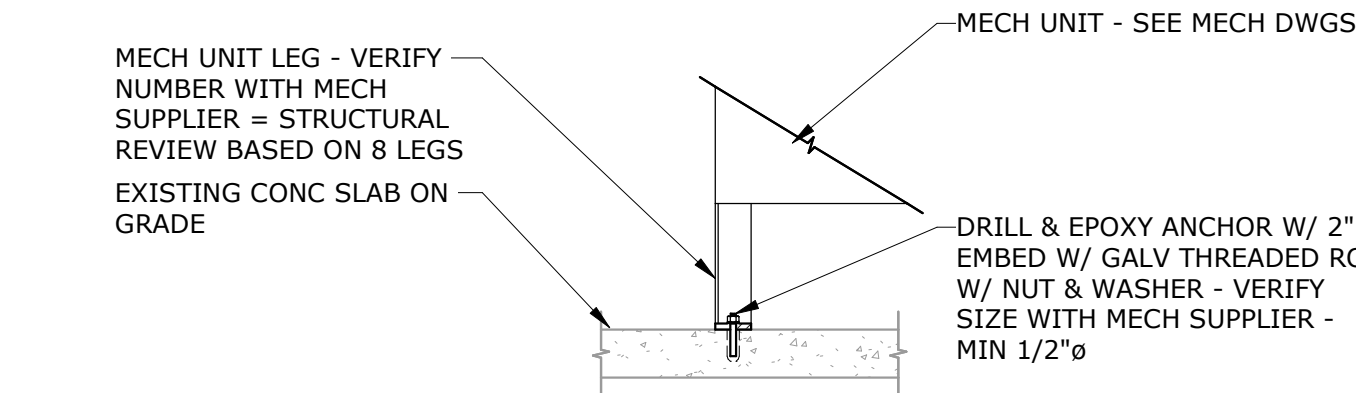
E101

POWER GENERAL NOTES

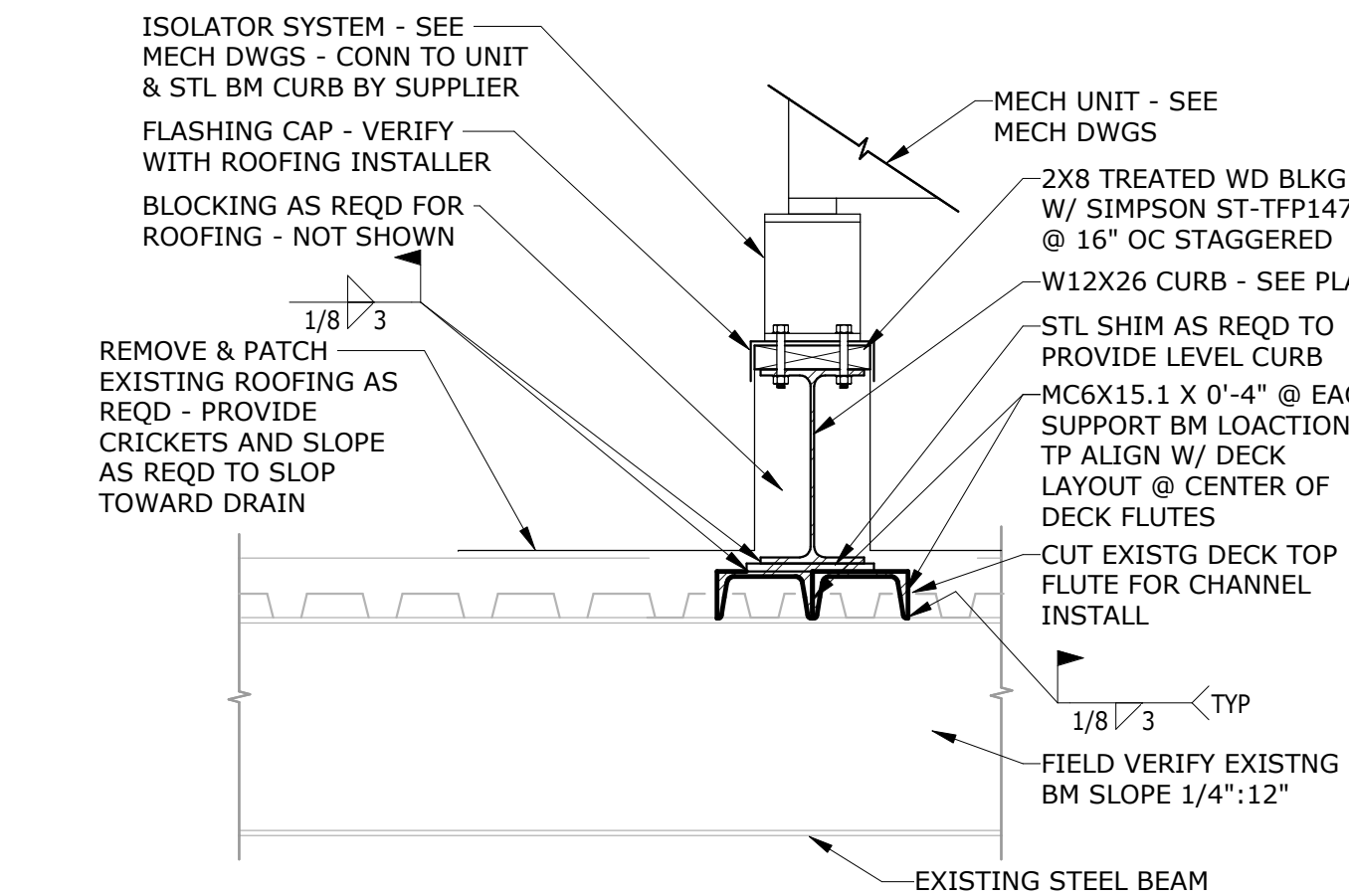
- A. COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. NO ASPECT OF A SYSTEM INSTALLATION OR ITS ROUGH-IN SHALL COMMENCE UNTIL PROPER AND TIMELY COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION HAS TRANSPIRED. ITEMS TO BE COORDINATED SHALL INCLUDE BUT NOT BE LIMITED TO: BUILDING STRUCTURE, SHEET METAL, PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- B. COORDINATE ELECTRICAL REQUIREMENTS FOR MECHANICAL UNITS WITH MECHANICAL CONTRACTOR AND FINAL MECHANICAL SHOP DRAWINGS.
- C. PROVIDE PENETRATIONS REQUIRED FOR ROUTING RACEWAYS THROUGH THE BUILDING. COORDINATE FIRE RATED WALL PENETRATIONS AND PROVIDE CONDUIT SLEEVES AND FIRE STOPPING TO MAINTAIN RATING. PROVIDE ALL INTERIOR PENETRATIONS ARE 1 HOUR WALLS AND EXTERIOR PENETRATIONS ARE 2 HOURS.



Plot Date & Time: 7/20/26 12:43 PM



B3 MECH BRG ON EXISTING SLAB
SCALE: 3/4" = 1'-0"



A3 MECH CURB BRG ON STL BM
SCALE: 1" = 1'-0"

• ALL ROOF WORK SHALL MAINTAIN EXISTING ROOF WARRANTY

DESIGN CRITERIA

D1) Codes:

International Building Code, 2024
International Existing Building Code, 2024
American Institute of Steel Construction
Specification for Structural Steel Buildings 360-22
Specification for Structural Stainless Steel Buildings 370-21
American Society of Civil Engineers / Structural Engineering
Institute ASCE/SEI 7-22

D2) Dead loads:

Existing Roof Dead Load: 15 psf

D3) Live loads:

Snow load:
Ground snow load: $P_g = 45 \text{ psf}$
Flat-roof snow load (minimum): $P_f = \text{psf}$
Snow exposure factor: $C_e = 1.0$
Risk Category: II
Thermal factor: $C_t = 1.0$
Snow importance factor: $I_s = 1.00$
Slope factor: $C_s = 1.0$
Snow drift load: Surcharge Load: $P_d = \text{psf}$
Drift Width: $w = \text{ft}$
Winter wind parameter for snow drift: $W = 0.55$

Roof load (minimum): 20 psf

D4) Lateral loads:

Wind: Ultimate design wind speed: 110 mph
Nominal design wind speed: 85 mph
Basic wind speed:
Tornado speed
ASD wind speed:
Risk category: II
Effective plan area: $A_e = \text{ft}^2$
Wind exposure: C
Interior pressure coefficient (+/-): $G C_{pi} = 0.18$
Wall component wind pressure: See Table

Seismic: Design Category: B
Risk category: II
Importance factor: $I_e = 1.00$
Mapped spectral response acceleration:
 $S_s = 0.086$
 $S_1 = 0.057$
D
 $S_{ds} = 0.091$
 $S_{d1} = 0.084$

Basic seismic-force-resisting system:

Design base shear: $V =$
Response coefficient: $C_R =$
Response modification factors: $R =$
Analysis procedure used:
Equivalent Lateral Force Analysis

D5) Special loads:

Equipment: As Indicated.

D6) Structural steel:

W- shapes: A992
Other rolled shapes and connection material: ASTM A36
Stiffener plates: ASTM A36
Pipe: ASTM A53, Gr. B
Anchor bolts: ASTM F1554, Gr. 36
High Strength bolts: ASTM F3125, Gr. A325 (3/4" diameter U.N.O.)
Structural tubes: ASTM A500, Gr. C

SPECIAL INSPECTION REQUIREMENTS

SR1) The following types of work require special inspection based on section 1705 of the 2024 International Building Code. See Specification section 014500 for specific requirements. The owner will employ special inspectors who shall provide special inspections during:

- Structural Steel.
- Periodic visual inspection of field welds.

GENERAL NOTES

G1) Establish and verify all openings and inserts for mechanical, electrical, and plumbing with appropriate trade contractors. Opening sizes and locations shown for ducts, pipes, inserts, etc., when shown are for general information only and shall be verified prior to forming.

G2) Field verify all existing dimensions, member sizes, and elevations shown on the drawings. All discrepancies shall be immediately brought to the attention of the Design Professional.

G3) Before submitting a proposal for this work, each bidder shall visit the premises and acquaint themselves fully with the existing conditions, temporary construction required, quantities and types of equipment, etc. The bid shall include all sums required to do the work within the existing conditions. Disruption of normal activities in the work area must be kept to a minimum.

G4) Shop drawings prepared by suppliers, subcontractors, etc. shall be reviewed and coordinated prior to submitting to the Design Professional. Each shop drawing submitted shall be stamped, initialed, and dated as being reviewed by the construction manager/general contractor.

G5) Shop drawings prepared by the subcontractors, suppliers, etc. shall be reviewed by the Design Professional for conformance with design concept only. Review by the Design Professional shall not begin without the prior coordination and review by the construction manager/general contractor. Work shall not begin without the review by the Design Professional.

G6) Details and notes on the structural drawings are intended to be typical for similar situations elsewhere. Verify all dimensions with the architectural drawings. Do not scale drawings; use dimensions provided only.

G7) Options are for the contractor's convenience. The contractor shall be responsible for all changes necessary if they choose an option and shall coordinate all details. The cost of additional design work necessitated by selection of an option shall be borne by the contractor.

G8) The cost of additional design work due to errors or omissions in construction shall be borne by the contractor.

G9) Any engineering design provided by others and submitted for review or record shall bear the stamp and signature of a professional structural engineer licensed in the state of Iowa.

CONSTRUCTION PROCEDURES AND SAFETY REQUIREMENTS

P1) Comply with all applicable city, county, state, and federal laws, including the Occupational Safety and Health Act (OSHA) and regulations adopted pursuant thereto.

P2) The contract structural drawings and specifications represent the finished structure. Unless otherwise indicated, they do not indicate the means or methods of construction.

P3) Provide all measures necessary to protect the workers and other persons during construction. Provide all necessary measures to avoid excessive stresses and to hold the structural elements in place during construction. Such measures shall include, but not be limited to, bracing, shoring for construction equipment, shoring for earth banks forms, scaffolding, plankings, safety nets, support and bracing for cranes and hoists, guying, etc.

P4) Engage properly qualified persons to determine where and how temporary precautionary measures shall be used. Observation visits to the site by structural engineer's field representatives shall not include the items noted above.

P5) Supervise and direct the work so as to maintain sole responsibility for all construction means, methods, techniques, sequences, and procedures. Retain the services of a professional structural engineer licensed in the state of Iowa to design and supervise any scaffolding for workmen, and all shoring of forms and elements of the construction.

P6) Any engineering design provided by others and submitted for review and/or record shall bear the stamp and signature of a professional structural engineer licensed in the state of Iowa.

STRUCTURAL STEEL

S1) Structural steel details, fabrication, and erection shall conform to AISC 360-16 "Specification for Structural Steel Buildings" and AISC 303-16 "Code of Standard Practice for Steel Buildings and Bridges" unless otherwise shown or specified.

S2) All welding shall be done by AWS certified welders with experience and certification in the types of welding indicated. Certificates shall not have lapsed due to disuse for 6 months.

S3) All welds to be E70XX electrodes unless noted otherwise.

S4) Field connections shall be welded. Welds indicated with a shop weld symbol may be made in the field with the approval of the structural engineer.

S5) Unless noted otherwise, all welds shall be continuous 3/16" throat. All full and/or partial penetration welds shall be fully detailed on the shop drawing.

S6) Shop paint structural steel with a standard primer.

S7) Cuts, holes, openings, etc., required in structural steel members for the work of other trades shall be shown on the shop drawings. Burning of holes and cuts in the field shall not be allowed, except by written authorization from the structural engineer.

S8) Furnish and install miscellaneous steel (curbs, hangers, expansion joint angles, struts, etc.) as called for or as necessary per mechanical/electrical drawings.

S9) Fabricate and install beams with natural camber upwards.

KPFF ABBREVIATIONS			
ADDED	ADDITIONAL	KO	KNOCK OUT
ALT	ALTERNATE	LAM	LAMINATED
ALUM	ALUMINUM	LT GA	LIGHT GAGE
ANCH	ANCHOR	LOC	LOCATION
APPROX	APPROXIMATE	LDH	LONG DIM HORIZ
ARCH	ARCHITECTURAL	LDV	LONG DIM VERT
@		AT	LONG LEG BACK-TO-BACK
BM	BEAM	LLH	LONG LEG HORIZ
BRG	BEARING	LLV	LONG LEG VERT
BTWN	BETWEEN	LONGIT	LONGITUDINAL
BLKG	BLOCKING	MFR	MANUFACTURER
BD	BOARD	MAS	MASONRY
BOT	BOTTOM	MAT	MATERIAL
BLDG	BUILDING	MAX	MAXIMUM
CIP	CAST-IN-PLACE	MECH	MECHANICAL
CNTR	CENTER	MTL	METAL
CL	CENTERLINE	MIN	MINIMUM
CLR	CLEAR	MISC	MISCELLANEOUS
CFMF	COLD-FORMED METAL...	NS	NEAR SIDE
COL	COLUMN	NOM	NOMINAL
COMP	COMPOSITE	NIC	NOT IN CONTRACT
CONC	CONCRETE	NTS	NOT TO SCALE
CMU	CONCRETE MASONRY...	# or NO	NUMBER
CONN	CONNECTION	OC	ON CENTER
CONST	CONSTRUCTION	OPNG	OPENING
CONT	CONTINUOUS	OPP	OPPOSITE
CONTR	CONTRACTOR	OD	OUTSIDE DIA.
CW	CURTAIN WALL	OF	OUTSIDE FACE
DEFL	DEFLECTION	PARL	PARALLEL
d	DEGREE	d	PENNY
DTL	DETAIL	PIERP	PERPENDICULAR
DIAG	DIAGONAL	PLATE	PLATE
Ø	DIAMETER	PLYWD	PLYWOOD
DIM	DIMENSION	# OR LB	POUND
DBL	DOUBLE	PSI	POUNDS PER SQ. INCH
DWG	DRAWING	PSF	POUNDS PER SQ.FT.
EA	EACH	PDF	POWER DRIVEN FASTENER
EF	EACH FACE	PREFAB	PREFABRICATED
ELECT	ELECTRICAL	PRELIM	PRELIMINARY
EL	ELEVATION	RAD or R	RADIUS
ELV	ELEVATOR	RAN	REACTION
EMBED	EMBEDMENT	REINF	REINFORCING
EOD	EDGE OF DECK	REQD	REQUIRED
EOR	ENGINEER OF RECORD	RTN	RETURN
EOS	EDGE OF SLAB	REV	REVISION
EQ	EQUAL	SCHED	SCHEDULE
ERECT	ERECTION	SECT	SECTION
EW	EACH WAY	SHTHG	SHEATHING
EXISTG	EXISTING	SHT	SHEET
EXP	EXPANSION	SLBB	SHORT LEG...
EXT	EXTERIOR	SSLT	SHORT SLOTTED HOLE
FS	FIELD VERIFY	SIM	SIMILAR
FV	FIELD VERIFY	SPA	SPACE
FIN	FINISH	SPECS	SPECIFICATIONS
FLR	FLOOR	SQ	SQUARE
FT	FOOT	STD	STANDARD
FTG	FOOTING	STL	STEEL
FDN or...	FOUNDATION	STIFF	STIFFENER
FRMG	FRAMING	STRUCT	STRUCTURAL
GA	GAGE OR GAUGE	TEMP	TEMPERATURE
GALV	GALVANIZED	THRU	THROUGH
GYP	GYP SUM	T & G	TONGUE & GROOVE
GYP BD	GYP SUM BOARD	TRANS	TRANSVERSE
HD	HEADED	TYP	TYPICAL
HT	HEIGHT	UNO	UNLESS NOTED...
HPC	HIGH-PERFORMANCE...	VIF	VERIFY IN FIELD
HORIZ	HORIZONTAL	VERT	VERTICAL
IN	INCH	WWR	WELDED WIRE REINF
ID	INSIDE DIAMETER	W/	WITH
IF	INSIDE FACE	WD	WOOD
INSUL	INSULATION	WP	WORKING POINT
INT	INTERIOR	X-BRACING	CROSS BRACING
JT	JOINT	X-STRONG	EXTRA STRONG
JST	JOIST	XX-STRO...	DOUBLE EXTRA STRONG

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DAS IPBS
MOTIVAIR CHILLER REPLACEMENT
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JOHNSTON, IA 50131

Project No: 9525.00

Date: 07/06/2026

CONSTRUCTION DOCUMENTS

#	Revision	Date

Drawing Name:
STRUCTURAL NOTES & DETAILS

Drawing #:

S001

Project No:	9525.00
Date:	07/06/2026

[illegible]

Drawing #:

S101

