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LIST OF DRAWINGS

COVER

MECHANICAL

M1.1 MECHANICAL ROOM PART PLAN - MECHANICAL DEMOLITION and SCHEMATIC EXISTING CHILLED WATER PIPING DIAGRAM

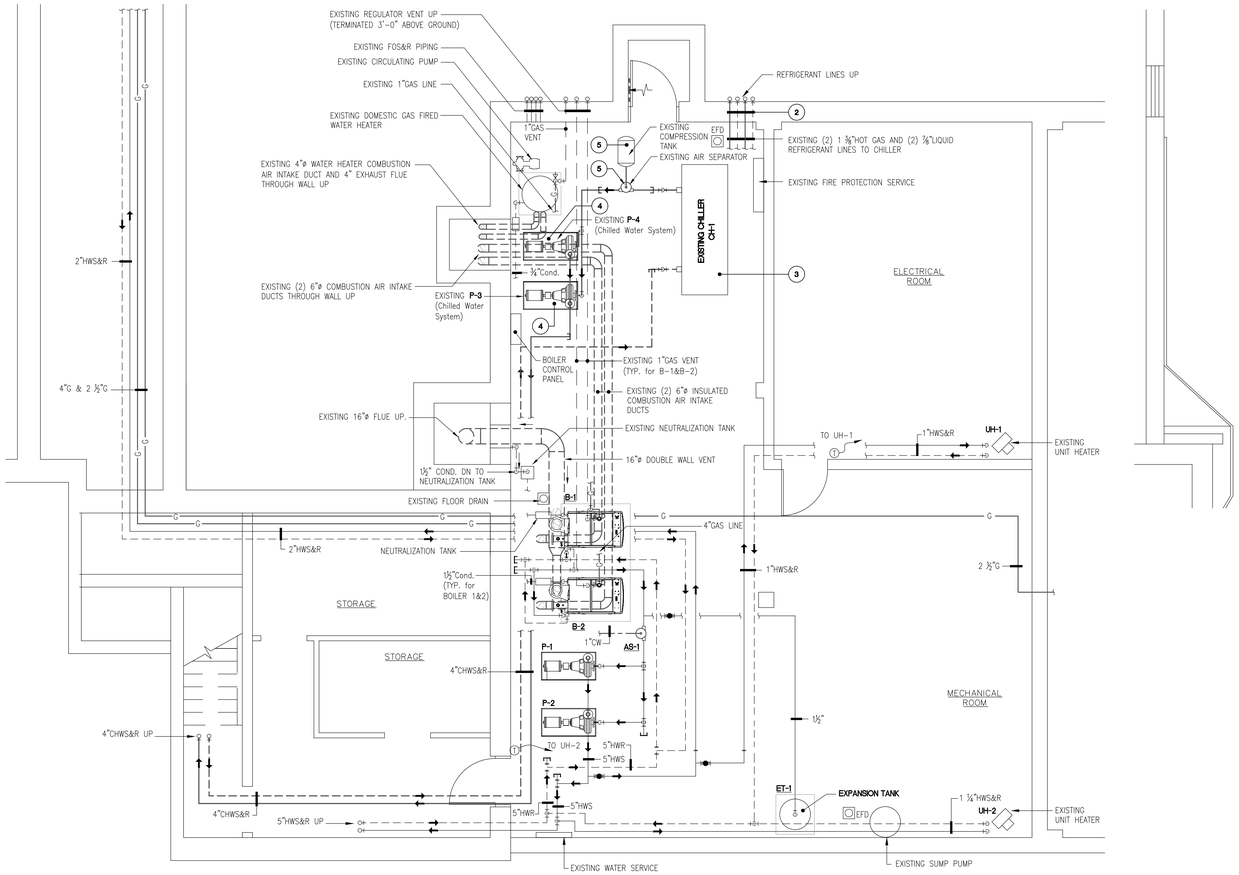
M1.2 MECHANICAL ROOM PART PLAN - MECHANICAL NEW WORK, SCHEMATIC PIPING DIAGRAM, SCHEDULES AND DETAILS

M1.3 MECHANICAL CONTROL DIAGRAM

ELECTRICAL

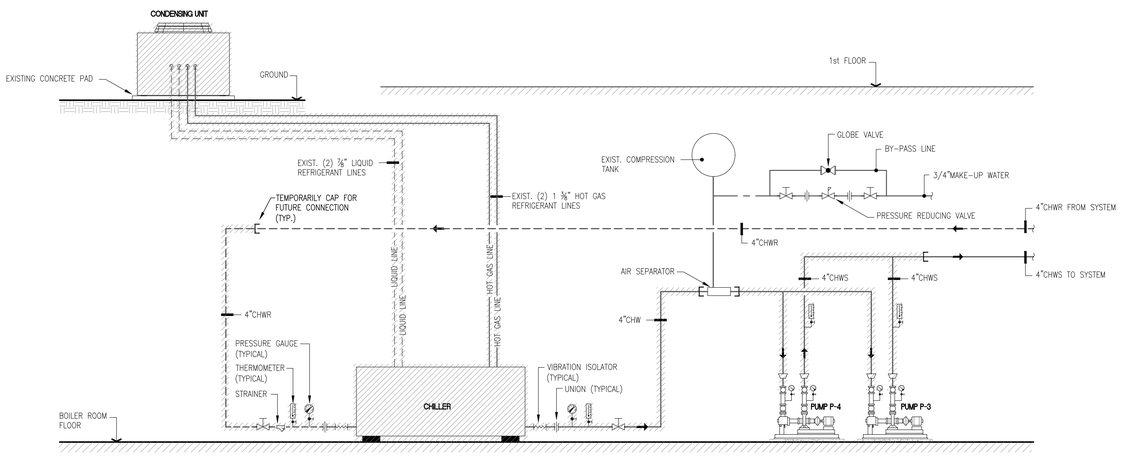
E1.1 MECHANICAL ROOM PART PLAN ELECTRICAL DEMOLITION and NEW WORK

08/09/2019



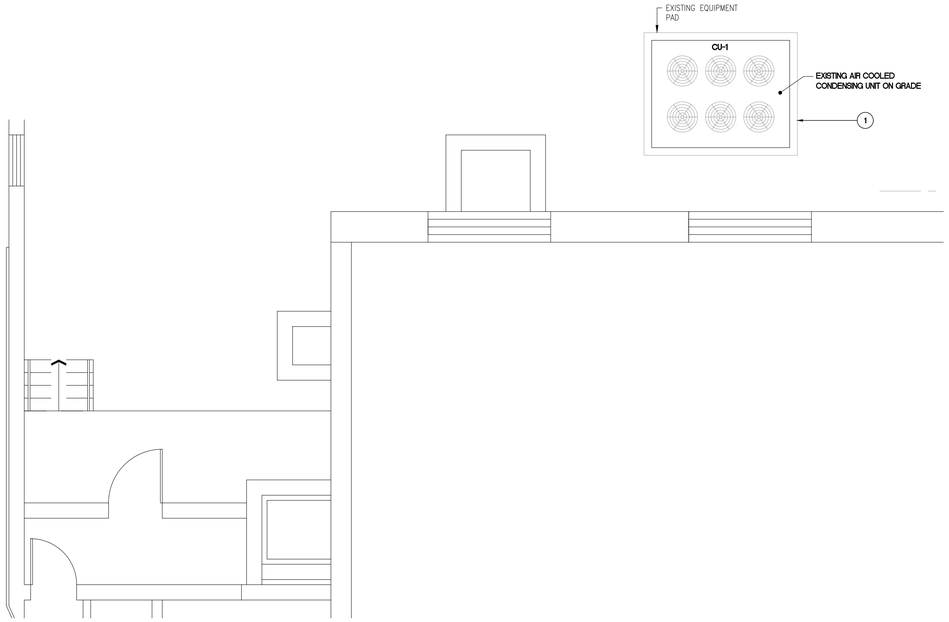
MECHANICAL ROOM PART PLAN – MECHANICAL DEMOLITION

SCALE: 1/4"=1'-0"



EXISTING AIR CONDITIONING PIPING SCHEMATIC DIAGRAM

NO SCALE



FIRST FLOOR PART PLAN – MECHANICAL DEMOLITION

SCALE: 1/4"=1'-0"

GENERAL DEMOLITION NOTES

1 – THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITY LINES INCLUDING ELECTRICAL, SEWER, WATER, GAS, TELEPHONE, ETC. THE DRAWINGS SHOW DIAGRAMMATICALLY THE APPROXIMATE LOCATION OF UTILITIES WHERE INFORMATION IS AVAILABLE, BUT THE DRAWINGS ARE NOT EXACT AS TO THE QUANTITY, EXTENT OR LOCATION. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING ALL PHASES OF THE WORK TO LOCATE, IDENTIFY, AND PROTECT EXISTING UTILITIES. THE CONTRACTOR SHALL RECORD RECORD LOCATION OF AND REPAIR DAMAGE TO EXISTING UTILITIES WHICH ARE ENCOUNTERED AS A RESULT OF WORK UNDER THIS CONTRACT.

2 – COORDINATE ALL DEMOLITION WORK WITH THE REQUIREMENTS OF THE NEW SCOPE OF WORK.

MECHANICAL DEMOLITION WORK NOTES

1 – PRIOR TO SUBMITTING BID, VISIT THE SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK TO BE PERFORMED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVERS. INCLUDE IN THE BID ALL DEMOLITION WORK REQUIRED.

2 – THE DEMOLITION DRAWINGS ARE INTENDED ONLY TO DEFINE THE GENERAL SCOPE OF DEMOLITION WORK AND TO ASSIST THE CONTRACTOR DURING BIDDING. THE DEMOLITION DRAWINGS MAY NOT SHOW EVERY ITEM WHICH MUST BE DISCONNECTED, REMOVED, OR RELOCATED IN ORDER TO FACILITATE NEW WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION WORK REQUIRED WHETHER OR NOT SHOWN ON THE PLANS.

3 – COORDINATE AND SCHEDULE ALL WORK WITH THE OWNER TO MINIMIZE INCONVENIENCE TO THE BUILDING OCCUPANTS. ALL SERVICES AND SYSTEMS SERVING OCCUPIED AREAS OF THE BUILDING SHALL BE MAINTAINED IN OPERATION DURING WORKING SHIFTS.

4 – CONTRACTOR IS RESPONSIBLE FOR ANY TEMPORARY WORK REQUIRED TO KEEP THE BUILDING OCCUPIED DURING CONSTRUCTION.

5 – REMOVE AND/OR RELOCATE ALL EXISTING MECHANICAL WORK AS NECESSARY FOR THE PERFORMANCE OF THE WORK OF THIS CONTRACT.

6 – REMOVE ALL DEMOLITION MATERIAL FROM THE JOB SITE UNLESS NOTED DIFFERENTLY.

7 – CONTRACTOR SHALL MEASURE AND RECORD EXISTING CHILLED WATER FLOW PRIOR TO DEMOLITION.

– MECHANICAL DEMOLITION WORK SYMBOLS –

TAG	ACTION
1	EXISTING AIR COOLED CONDENSING UNIT AND ACCESSORIES SHALL BE REMOVED. EXISTING CONCRETE PAD SHALL REMAIN.
2	EXISTING REFRIGERANT PIPING AND ACCESSORIES SHALL BE REMOVED. RECOVER EXISTING REFRIGERANT PER LOCAL, STATE AND FEDERAL REQUIREMENTS. PATCH TO MATCH OPENINGS.
3	EXISTING CHILLER AND ACCESSORIES SHALL BE REMOVED. CAP REMAINING CHWS&R PIPES FOR FUTURE CONNECTION.
4	EXISTING CHILLED WATER PUMPS, ASSOCIATED PIPING AND CONCRETE PAD SHALL BE REMOVED. CAP REMAINING PIPES FOR FUTURE CONNECTION
5	EXISTING CHILLED WATER SYSTEM COMPRESSION TANK AND AIR SEPARATOR SHALL REMAIN.

EXISTING PUMP SCHEDULE (FOR REFERENCE ONLY)

PUMP No.	LOCATION	AREA SERVED	TYPE	MANUFACTURER	MODEL	GPM	HEAD (FT)	RPM	HP	VOLTS	PH	Hz	IMPELLER	REMARKS
P-3	BOILER RM	CHILLED WATER SYSTEM	BASE MTD. CENTRIFUGAL	TACO	BB 4008	140	45	1750	3	208	3	60	7"	1
P-4	BOILER RM	CHILLED WATER SYSTEM (STAND-BY)	BASE MTD. CENTRIFUGAL	TACO	BB 4008	140	45	1750	3	208	3	60	7"	1

REMARKS: 1. SUPPLEMENTAL BID # 1

EXISTING CONDENSING UNIT SCHEDULE (FOR REFERENCE ONLY)

UNIT No.	MANUFACTURER	MODEL	CAPACITY (TONS)	CONDENSER FANS					COMPRESSOR			LIQUID AND SUCTION LINES	ELECTRICAL	REFRIGERANT	REMARKS
				EDB(°F)	EWB(°F)	QTY.	MCA	FLA(EA.)	QTY.	RLA	LRA				
CU-1	TRANE	CAUB-C60	57.4	95°	–	6	25.6	4.1	–	–	–	(2) ⅞" LIQUID & (2) 1 ⅜" HOT GAS	208-3-60	R-22	1

REMARKS: 1. SUPPLEMENTAL BID # 1

CHILLER SCHEDULE (FOR REFERENCE ONLY)

Unit No.	LOCATION	MANUFACTURER	MODEL	EWT(°F)	LWT(°F)	TONS COOLING @ 95° AMB.	NUMBER OF COMPRESSORS	RLA	ELECTRICAL	KW	GPM	WEIGHT (lbs)	WPD (FT.)	MCA	REMARKS
CH-1	BOILER RM	TRANE	CCAC-C60M	55°	45°	57.2	2	127	208-3-60	67.4	123	2247	12	286	1

REMARKS: 1. SUPPLEMENTAL BID # 1

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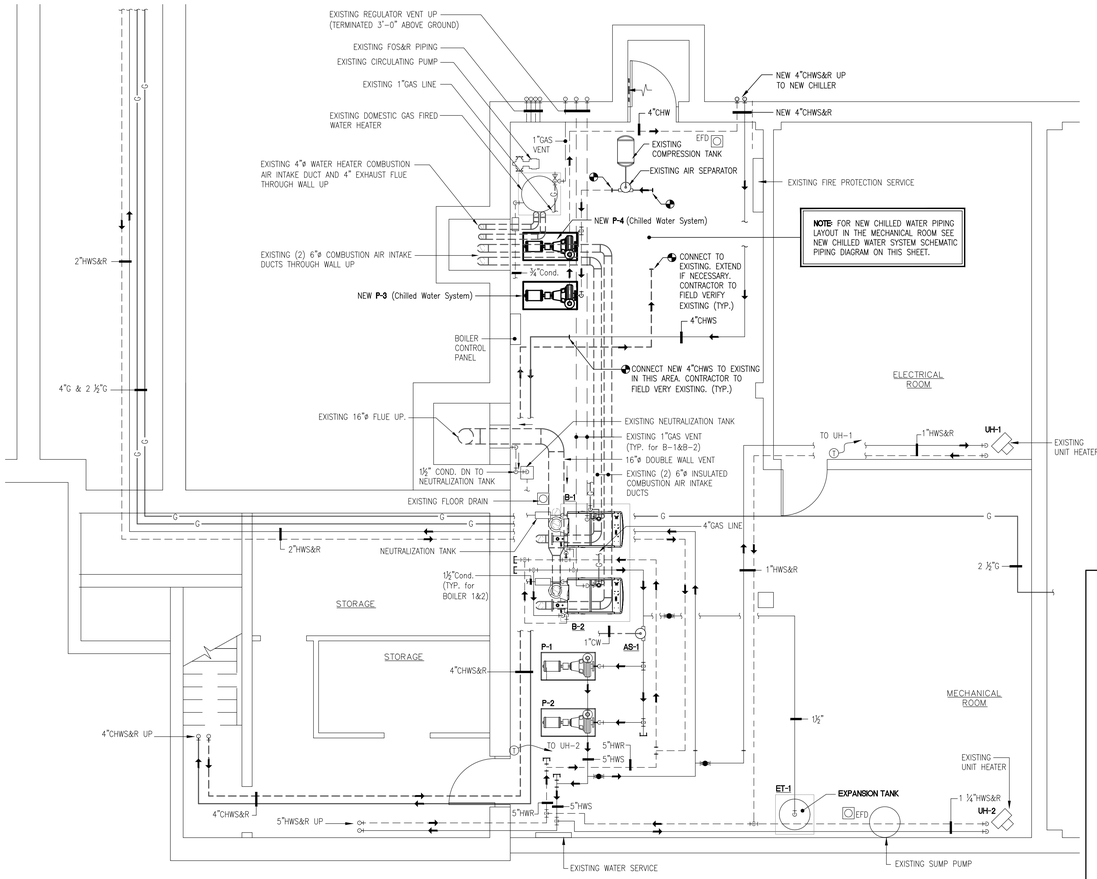
TITLE
MECH. ROOM PART PLAN–MECH. DEMOLITION and SCHEMATIC EXISTING CHILLED WATER PIPING DIAGRAM

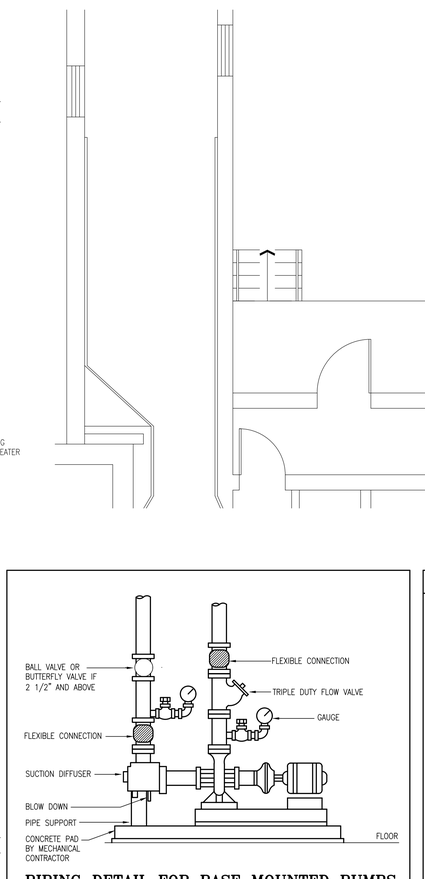
DATE 08/09/2019

DWG. NO.
M1.1



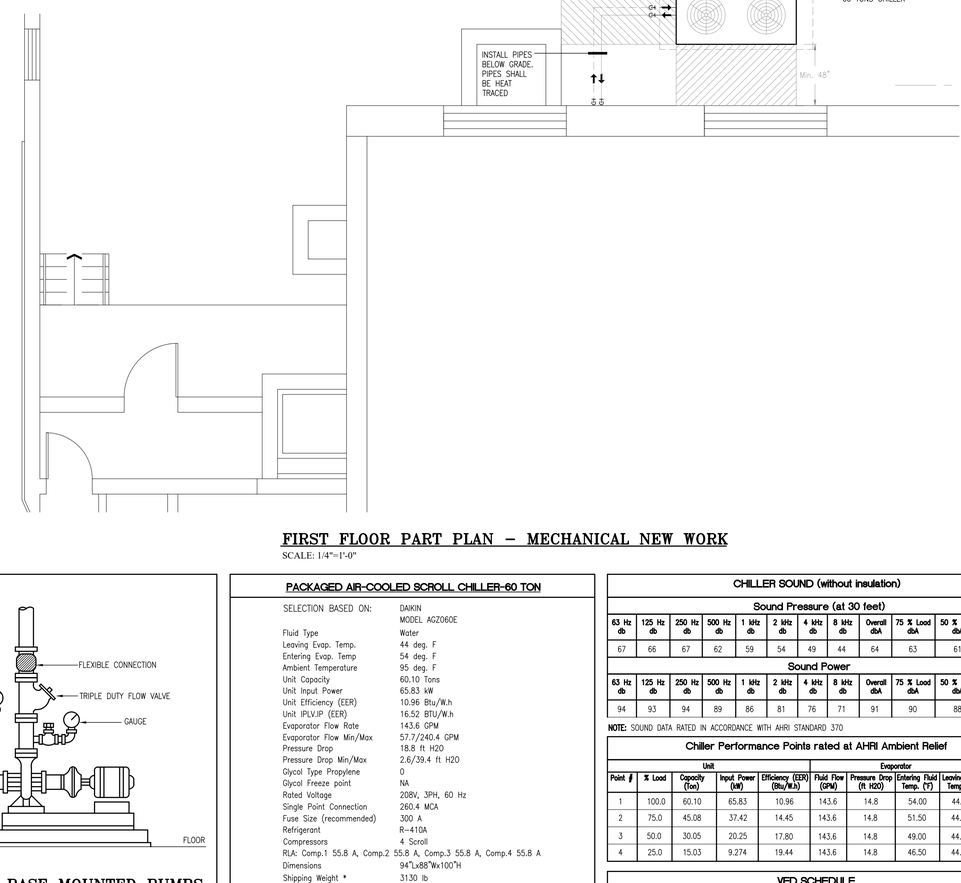
MECHANICAL ROOM PART PLAN – MECHANICAL NEW WORK

SCALE: 1/4"=1'-0"



PIPING DETAIL FOR BASE MOUNTED PUMPS

NO SCALE



FIRST FLOOR PART PLAN – MECHANICAL NEW WORK

SCALE: 1/4"=1'-0"

PACKAGED AIR-COOLED SCROLL CHILLER-60 TON

SELECTION BASED ON:	DAIKIN MODEL AGZ060E
Fluid Type	Water
Leaving Evap. Temp.	44 deg. F
Entering Evap. Temp	54 deg. F
Ambient Temperature	95 deg. F
Unit Capacity	60.10 Tons
Unit Input Power	65.83 kW
Unit Efficiency (EER)	10.96 Btu/W.h
Unit IPLV.IP (EER)	16.52 BTU/W.h
Evaporator Flow Rate	143.6 GPM
Evaporator Flow Min/Max	57.7/240.4 GPM
Pressure Drop	18.8 ft H2O
Pressure Drop Min/Max	2.6/39.4 ft H2O
Glycol Type Propylene	0
Glycol Freeze point	NA
Rated Voltage	208V, 3PH, 60 Hz
Single Point Connection	260.4 MCA
Fuse Size (recommended)	300 A
Refrigerant	R-410A
Compressors	4 Scroll
RLA: Comp.1 55.8 A, Comp.2	55.8 A, Comp.3 55.8 A, Comp.4 55.8 A
Dimensions	94"Lx88"Wx100"H
Shipping Weight *	3130 lb
Operating Weight *	3155 lb

* Shipping and operating weights do not include the weights of any Options or Accessories

CHILLER CONTROLS SHALL BE BACNET COMPATIBLE
RECONNECT TO EXISTING BUILDING EMS

UNITS USING CFC BASED REFRIGERANTS WILL NOT BE ACCEPTABLE.

ACCEPTABLE SUBSTITUTIONS: TRANE, SMARDT

CHILLER SOUND (without insulation)

Sound Pressure (at 30 feet)

63 Hz db	125 Hz db	250 Hz db	500 Hz db	1 kHz db	2 kHz db	4 kHz db	8 kHz db	Overall dbA	75 % Load dbA	50 % Load dbA	25 % Load dbA
67	66	67	62	59	54	49	44	64	63	61	60

Sound Power

63 Hz db	125 Hz db	250 Hz db	500 Hz db	1 kHz db	2 kHz db	4 kHz db	8 kHz db	Overall dbA	75 % Load dbA	50 % Load dbA	25 % Load dbA
94	93	94	89	86	81	76	71	91	90	88	87

NOTE: SOUND DATA RATED IN ACCORDANCE WITH AHRI STANDARD 370

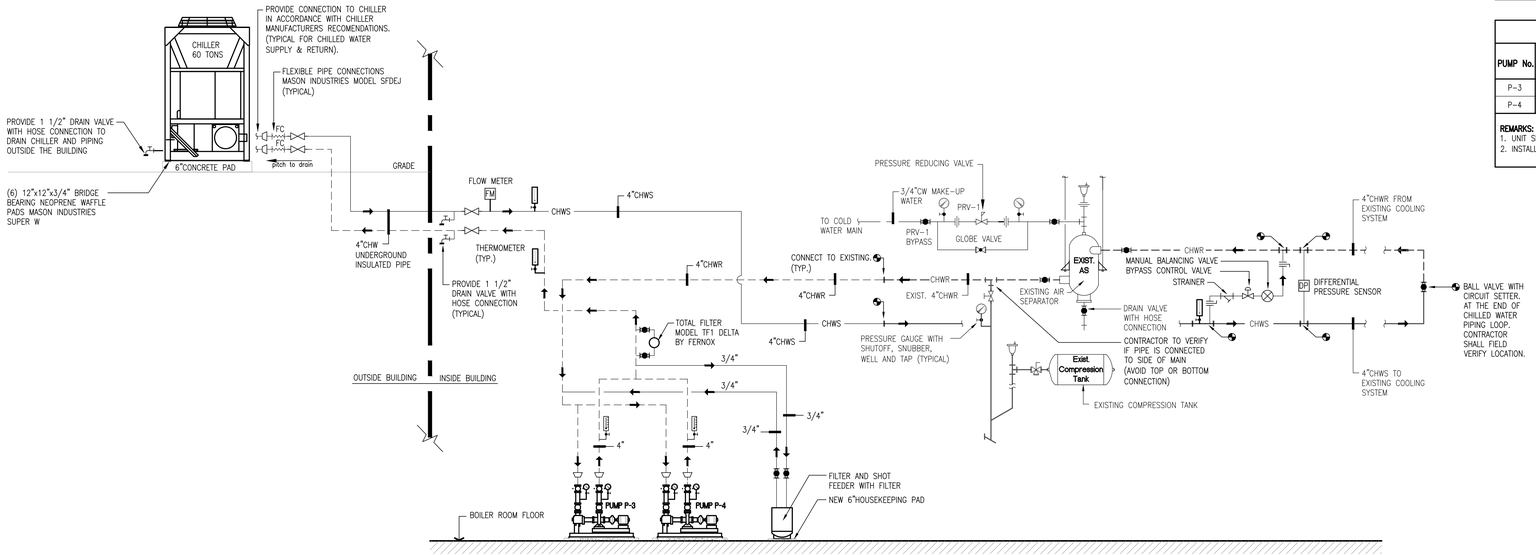
Chiller Performance Points rated at AHRI Ambient Relief

Point #	Unit: % Load	Unit: Capacity (Ton)	Unit: Input Power (kW)	Unit: Efficiency (EER) (Btu/W.h)	Evaporator: Fluid Flow (GPM)	Evaporator: Pressure Drop (ft H20)	Evaporator: Entering Fluid Temp. (°F)	Evaporator: Leaving Fluid Temp. (°F)	Condenser: Ambient Air Temp. (°F)
1	100.0	60.10	65.83	10.96	143.6	14.8	54.00	44.00	95.0
2	75.0	45.08	37.42	14.45	143.6	14.8	51.50	44.00	80.0
3	50.0	30.05	20.25	17.80	143.6	14.8	49.00	44.00	65.0
4	25.0	15.03	9.274	19.44	143.6	14.8	46.50	44.00	55.0

VFD SCHEDULE

UNIT SERVED	MANUF.	MODEL	HP	VOLTS	PH.	REMARKS
P-3	ABB	ACH 550	3	208	3	MANUAL BYPASS, BY ATC CONTRACTOR
P-4	ABB	ACH 550	3	208	3	MANUAL BYPASS, BY ATC CONTRACTOR

NOTES:
1. POWER WIRING AND RACEWAY BY DIVISION 26.
2. DISCONNECTS AND STARTING RELAYS FURNISHED BY DIVISION 23.
3. REFER TO SCHEDULES FOR MOTOR VOLTAGE AND PHASE REQUIREMENTS.



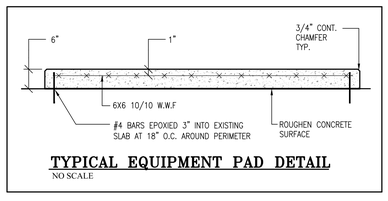
NEW CHILLED WATER SYSTEM PIPING DIAGRAM

NO SCALE

PUMP SCHEDULE

PUMP No.	LOCATION	AREA SERVED	TYPE	MANUFACTURER	SERIES	MODEL	GPM	HEAD (FT)	Control HEAD (FT)	RPM	HP	VOLTS	PH	Duty point Pump EFFICIENCY	SUCTION DIFFUSER: MODEL	Sys. Side	Suct. Side	TRIPLE DUTY VALVE	REMARKS
P-3	MECH. RM	CHILLED WATER SYSTEM	BASE MTD.	BELL & GOSSETT	e-1510	2.5AC-es	140	45	13.5	1800	3	208	3	76%	DD-3X	3	3	3DS-3B	1,2,3,5,6
P-4	MECH. RM	Chilled Water System (Stand-By)	BASE MTD.	BELL & GOSSETT	e-1510	2.5AC-es	140	45	13.5	1800	3	208	3	76%	DD-3X	3	3	3DS-3B	1,2,4,5,6

REMARKS:
1. UNIT SHALL BE SEISMICALLY SUPPORTED.
2. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. OPERATING.
4. STANDBY.
5. PROVIDE WITH PREMIUM EFFICIENCY MOTOR
6. PROVIDE VARIABLE FREQUENCY DRIVE.



TYPICAL EQUIPMENT PAD DETAIL

NO SCALE

GENERAL NOTES :

1. DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL INTENT OF WORK, ALL CONTRACTORS MUST COORDINATE WITH OTHER TRADES OTHER TRADES BEFORE PROCEEDING WITH ANY WORK.
2. THE CONTRACTOR SHALL COORDINATE THE ROUTING AND INSTALLATION OF ALL SYSTEMS TO AVOID CONFLICTS.
3. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS PRIOR TO SUBMITTING HIS BID.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE LOCATIONS AND SIZES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY WORK REQUIRED TO KEEP THE BUILDING OCCUPIED DURING THE CONSTRUCTION.

REVISIONS

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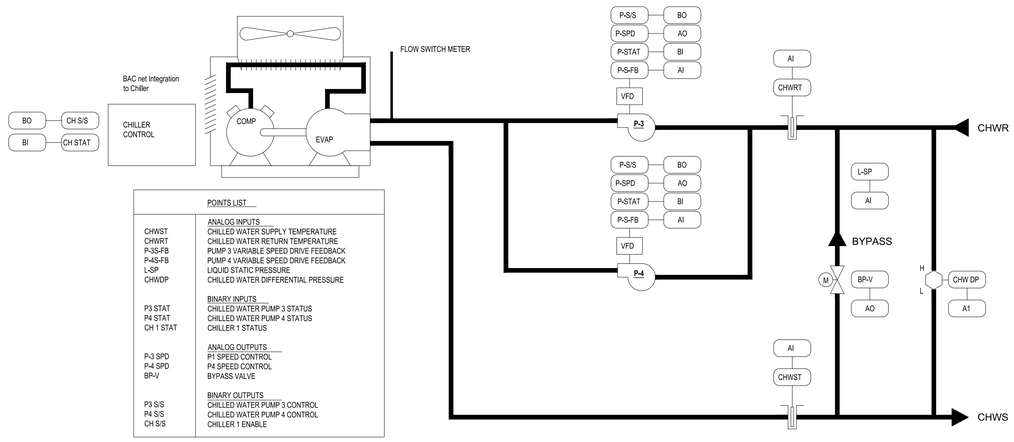
TITLE
MECH.ROOM PART PLAN–MECH. NEW WORK, SCHEMATIC PIPING DIAGRAM, SCHEDULES AND DETAILS

DATE 08/09/2019

DWG. NO.
M1.2



POINTS LIST	
	ANALOG INPUTS
CHWST	CHILLED WATER SUPPLY TEMPERATURE
CHWRT	CHILLED WATER RETURN TEMPERATURE
P-3S-FB	PUMP 3 VARIABLE SPEED DRIVE FEEDBACK
P-4S-FB	PUMP 4 VARIABLE SPEED DRIVE FEEDBACK
L-SP	LIQUID STATIC PRESSURE
CHWDP	CHILLED WATER DIFFERENTIAL PRESSURE
	BINARY INPUTS
P3 STAT	CHILLED WATER PUMP 3 STATUS
P4 STAT	CHILLED WATER PUMP 4 STATUS
CH 1 STAT	CHILLER 1 STATUS
	ANALOG OUTPUTS
P-3 SPD	P1 SPEED CONTROL
P-4 SPD	P4 SPEED CONTROL
BP-V	BYPASS VALVE
	BINARY OUTPUTS
P3 S/S	CHILLED WATER PUMP 3 CONTROL
P4 S/S	CHILLED WATER PUMP 4 CONTROL
CH S/S	CHILLER 1 ENABLE

CHILLER CONTROL DIAGRAM

NO SCALE

GENERAL DRAWING NOTES:

1. ALL ELECTRIC WIRING, CONNECTIONS, DEVICES, RACEWAY AND HARDWARE REQUIRED FOR THE INSTALLATION OF THE TEMPERATURE CONTROL SYSTEM AS SPECIFIED AND SHOWN ON THE DRAWINGS SHALL BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR (TCC).
2. ALL CONTROL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE CONTROL SYSTEM MANUFACTURER'S REQUIREMENTS AND CURRENT CODES.
3. ALL LOW VOLTAGE CONTROL WIRING SHALL BE PLENUM RATED CABLE OF TYPES AND SIZES REQUIRED BY THE CONTROL SYSTEM MANUFACTURER. PROVIDE MINIMUM OF 3/4" EMT CONDUIT FOR ALL WIRING EXPOSED TO VIEW AND FOR WIRING DROPS AND RUNS WITHIN WALLS. EMT FITTINGS AND CONNECTORS SHALL BE STEEL SET SCREW TYPE.
4. ALL CONDUITS SHALL TERMINATE WITH JUNCTION BOXES OR OUTLET BOXES. PROVIDE BUSHINGS FOR ALL WIRING ENTRIES INTO THE CONDUIT SYSTEM.
5. ALL TEMPERATURE CONTROL WIRING SHALL BE NEATLY INSTALLED WITH CABLE RUNS INSTALLED PARALLEL TO OR AT RIGHT ANGLES TO THE LINES OF THE BUILDING. ALL WIRING IN NORMALLY OCCUPIED AREAS OF THE BUILDING SHALL BE CONCEALED FROM VIEW. OPEN CABLE RUNS ABOVE CEILINGS SHALL BE BUNDLE TIED WITH PLASTIC CABLE TIES AND SHALL BE SUPPORTED FREE FROM THE CEILING AND MECHANICAL/ELECTRICAL EQUIPMENT USING APPROVED CABLE HANGERS AND CABLE CLIPS.
6. THE TEMPERATURE CONTROL CONTRACTOR SHALL COORDINATE POWER SUPPLY REQUIREMENTS OF THE CONTROL SYSTEM WITH DIVISION 26.
7. REFER TO SPECIFICATION FOR ADDITIONAL CONTROLS REQUIREMENTS AND THE EQUIPMENT SEQUENCE OF OPERATIONS.
8. ALL CONTROLS DEVICES AND ELECTRONICS SHALL BE INSTALLED WITHIN A NEMA-1 ENCLOSURE LOCATED WITHIN PROXIMITY TO THE EQUIPMENT SERVED.
9. REFER TO MECHANICAL SPECIFICATIONS FOR SEQUENCE OF OPERATIONS AND ADDITIONAL DDC SENSORS REQUIREMENT.

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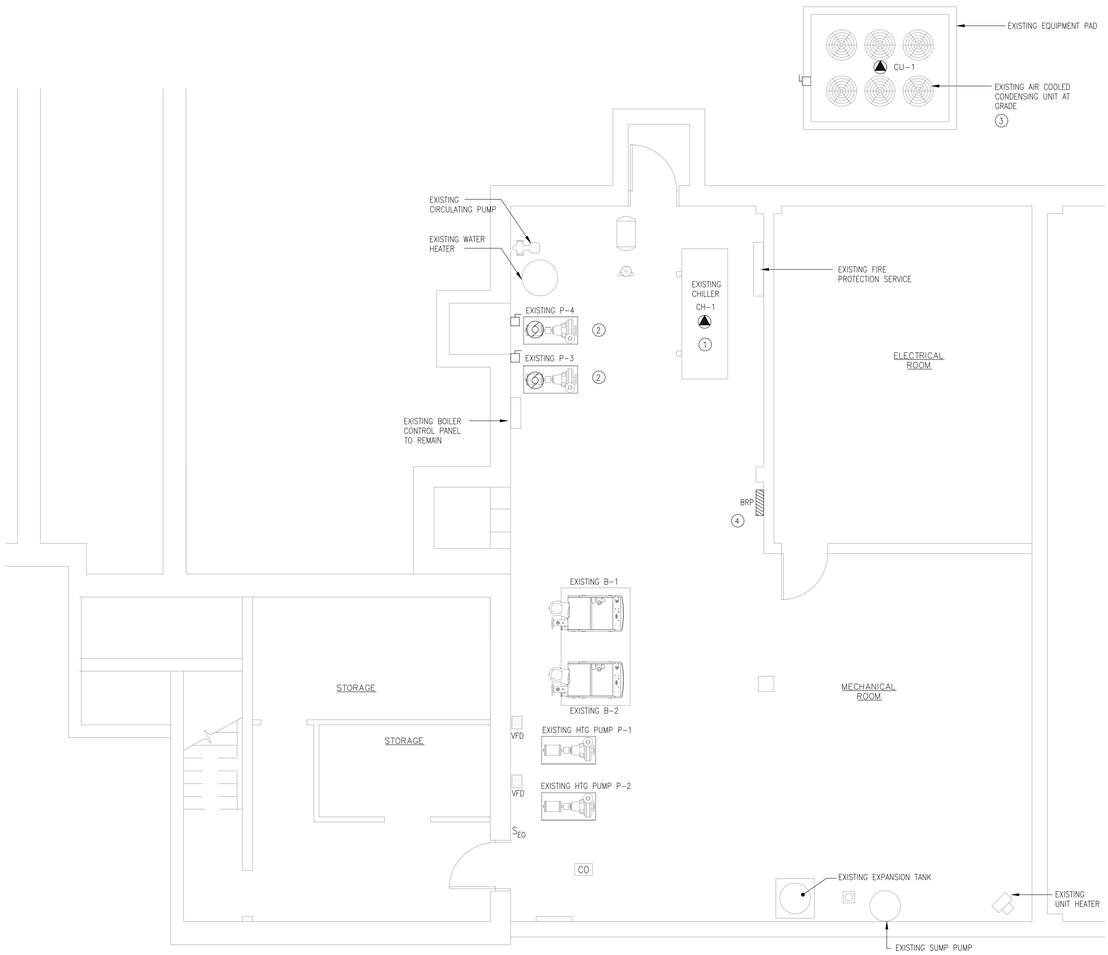
TITLE
MECHANICAL CONTROL DIAGRAM

DATE 08/09/2019

DWG. NO.
M1.3



MECHANICAL ROOM PART PLAN – ELECTRICAL DEMOLITION

SCALE: 1/4"=1'-0"

– ELECTRICAL DEMOLITION WORK SYMBOLS –	
TAG	ACTION
1	EXISTING CHILLER TO BE REMOVED. DISCONNECT AND REMOVE EXISTING BRANCH CIRCUIT WIRING AND CONDUIT BACK TO EXISTING SOURCE PANELBOARD.
2	DISCONNECT AND REMOVE EXISTING CHILLED WATER PUMPS BRANCH CIRCUIT WIRING AND CONDUIT BACK TO SOURCE PANELBOARD. DISCONNECT AND REMOVE EXISTING STARTER AND DISCONNECT SWITCH.
3	EXISTING CHILLER CONDENSING UNIT TO BE REMOVED. DISCONNECT AND REMOVE EXISTING BRANCH CIRCUIT WIRING AND CONDUIT BACK TO SOURCE PANELBOARD.
4	EXISTING G.E. A SERIES 208Y/120V, 125 AMP PANELBOARD BRP SHALL REMAIN. PROVIDE A NEW 20A, 1P C/B FOR NEW RECEPTACLE BRANCH CIRCUIT AND A NEW 20A, 1P GFPE FOR NEW HEAT TRACING BRANCH CIRCUIT.

ELECTRICAL DEMOLITION WORK NOTES

1 – PRIOR TO SUBMITTING BID, VISIT THE SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK TO BE PERFORMED. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVERS. INCLUDE IN THE BID ALL DEMOLITION WORK REQUIRED.

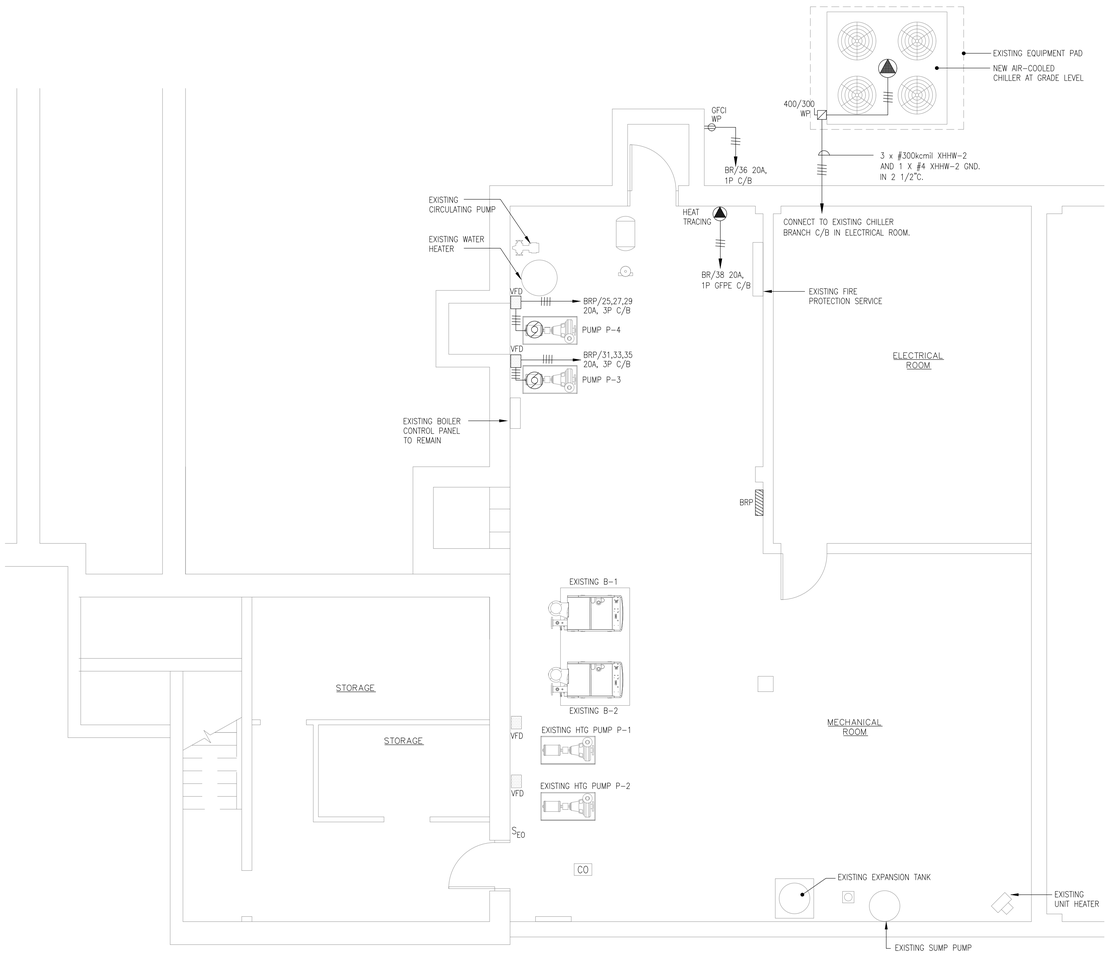
2 – THE DEMOLITION DRAWINGS ARE INTENDED ONLY TO DEFINE THE GENERAL SCOPE OF DEMOLITION WORK AND TO ASSIST THE CONTRACTOR DURING BIDDING. THE DEMOLITION DRAWINGS MAY NOT SHOW EVERY ITEM WHICH MUST BE DISCONNECTED, REMOVED, OR RELOCATED IN ORDER TO FACILITATE NEW WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION WORK REQUIRED WHETHER OR NOT SHOWN ON THE PLANS.

3 – REMOVE AND/OR RELOCATE ALL EXISTING ELECTRICAL WORK AS NECESSARY FOR THE PERFORMANCE OF THE WORK OF THIS CONTRACT.

4 – EXISTING ELECTRICAL EQUIPMENT, WIRING, AND RACEWAYS SHALL NOT BE REUSED UNLESS SPECIFICALLY NOTED OTHERWISE.

5 – REMOVE ALL DEMOLITION MATERIAL FROM THE JOB SITE UNLESS NOTED DIFFERENTLY. MATERIAL REQUESTED BY THE OWNER FOR SALVAGE SHALL BE DELIVERED TO THE OWNER'S DESIGNATED MATERIAL STORAGE AREA.

6 – PROVIDE WIRING AS REQUIRED AND RECONNECT EXISTING FIXTURES, DEVICES, OR EQUIPMENT THAT ARE TO REMAIN ACTIVE, BUT HAVE BEEN DISCONNECTED DURING DEMOLITION OF OTHER FIXTURES, DEVICES, OR EQUIPMENT.



MECHANICAL ROOM PART PLAN – ELECTRICAL NEW WORK

SCALE: 1/4"=1'-0"

GENERAL SPECIFICATION NOTES – POWER

1 – THE CONTRACTOR SHALL VERIFY AND OBTAIN ALL NECESSARY DIMENSIONS AT THE BUILDING.

2 – FINISHED WORK: THE INTENT OF THE SPECIFICATIONS AND DRAWINGS IS TO CALL FOR FINISHED WORK, COMPLETED, TESTED AND READY FOR OPERATION.

3 – GOOD PRACTICE: IT IS NOT INTENDED THAT THE DRAWINGS SHOW EVERY CONDUIT, JUNCTION BOX, FITTING OR MINOR DETAIL AND IT IS UNDERSTOOD THAT WHILE THE DRAWINGS MUST BE FOLLOWED AS CLOSELY AS CIRCUMSTANCES WILL PERMIT, THE SYSTEMS SHALL BE INSTALLED ACCORDING TO THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH GOOD PRACTICE.

4 – ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN ON DRAWINGS BUT MENTIONED IN SPECIFICATIONS OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECTS AND READY FOR OPERATION, EVEN IF NOT PARTICULARLY SPECIFIED, SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

5 – CODES AND STANDARDS – COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES AND STANDARDS WHEREVER APPLICABLE INCLUDING THE FOLLOWING: 2018 CONNECTICUT STATE BUILDING CODE, 2015 INTERNATIONAL BUILDING CODE, 2018 CONNECTICUT FIRE SAFETY CODE, 2015 INTERNATIONAL FIRE CODE, 2013 NFPA 72 NATIONAL FIRE ALARM CODE, 2017 NFPA 70 NATIONAL ELECTRICAL CODE, 2010 NFPA 110 STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS, 2015 INTERNATIONAL ENERGY CONSERVATION CODE, ICC/ANSI A117.1–2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, ADA, NFPA, UNDERWRITERS LABORATORIES, FACTORY MUTUAL INSURANCE COMPANY, NEMA STANDARDS.

6 – NOTE THAT THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL EQUIPMENT AND SYSTEMS, WITHOUT SHOWING EVERY DETAIL AND FITTING.

7 – RACEWAYS: PROVIDE EMT CONDUIT FOR ALL WIRING. EMT CONNECTORS AND COUPLINGS SHALL BE GALVANIZED STEEL SET-SCREW TYPE. PROVIDE GLAND COMPRESSION CONNECTORS AND COUPLINGS WHERE LOCATED IN DAMP AND WET LOCATIONS. PROVIDE FLEXIBLE STEEL CONDUIT FOR FINAL CONNECTIONS TO MOTOR DRIVEN EQUIPMENT. PROVIDE LIQUID TIGHT FLEXIBLE STEEL CONDUIT FOR FINAL CONNECTIONS TO MOTOR DRIVEN EQUIPMENT LOCATED OUTDOORS.

8 – BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, RATED 600 VOLTS, 90 DEG.C., COLOR CODED, TYPE XHHW–2.

9 – WIRE SIZE #8 AWG AND LARGER SHALL BE STRANDED. WIRE OF SIZE SMALLER THAN #8 AWG SHALL BE SOLID.

10 – MINIMUM SIZE CONDUCTORS FOR POWER AND LIGHTING SHALL BE #12 AWG. PROVIDE MINIMUM #10 AWG SIZE FOR RUNS EXCEEDING 75' IN CONDUCTOR LENGTH, AND #8 AWG SIZE FOR RUNS EXCEEDING 150' IN CONDUCTOR LENGTH. PROVIDE LARGER SIZE CONDUCTORS AS SCHEDULED OR AS NOTED ON THE DRAWINGS.

11 – THE NUMBER OF WIRES IN A CONDUIT RUN IS INDICATED ON THE DRAWINGS BY CROSS LINES ON THE CONDUIT RUNS. PROVIDE CODE–SIZED CONDUIT FOR THE NUMBER AND SIZE OF WIRES UNLESS A LARGER SIZE IS SHOWN ON THE DRAWINGS. MINIMUM CONDUIT SIZE SHALL BE 3/4".

12 – RACEWAYS SHALL BE CONCEALED WHEREVER POSSIBLE IN ALL FINISHED AREAS.

13 – RACEWAYS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO WALL LINES.

14 – RACEWAYS SHALL BE SUPPORTED FROM THE STRUCTURE BY STRAP HANGERS, ROD HANGERS, OR RACK MOUNTED, OR OTHER APPROVED ELECTRICAL MOUNTING.

15 – PROVIDE FIRE STOPPING AT ALL FIRE AND/OR SMOKE RATED WALL OR CEILING PENETRATIONS IN ORDER TO MAINTAIN ITS ORIGINAL INTEGRITY.

16 – OUTLET BOXES SHALL BE CODE GAUGE GALVANIZED STEEL AND SHALL BE OF SHAPES AND SIZES TO SUIT THEIR RESPECTIVE LOCATIONS AND INSTALLATIONS, AND SHALL BE PROVIDED WITH COVERS TO SUIT THEIR FUNCTION AND INSTALLATION. MINIMUM BOX SIZE SHALL BE 4" SQ. X 2 1/8" DEEP (2–GANG). PROVIDE CAST BOXES FOR OUTDOOR WORK.

17 – OUTLET BOXES SHALL BE EQUIPPED WITH FIXTURE STUD OR STRAPS WHERE REQUIRED.

18 – INSTALL BOXES IN ACCESSIBLE LOCATIONS AND AT UNIFORM HEIGHTS.

19 – SET BOXES AND COVERS SQUARE AND TRUE WITH BUILDING FINISH.

20 – BRANCH CIRCUIT WIRING AND ARRANGEMENT OF HOME RUNS HAS BEEN DESIGNED FOR MAXIMUM ECONOMY CONSISTENT WITH ADEQUATE SIZING FOR VOLTAGE DROPS, CIRCUIT AMPACITIES, AND OTHER CONSIDERATIONS. INSTALL THE WIRING WITH CIRCUITS ARRANGED AS SHOWN ON THE DRAWINGS, EXCEPT AS APPROVED IN ADVANCE BY THE ARCHITECT AND ENGINEER. DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL.

21 – PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH 120V SINGLE PHASE CIRCUIT. DO NOT USE A COMMON NEUTRAL FOR GROUPS OF CIRCUITS. PROVIDE A SEPARATE GROUND WIRE FOR EACH CIRCUIT BACK TO THE RESPECTIVE PANEL GROUND. IF MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE INSTALLED IN ONE CONDUIT THEY SHALL BE DE–RATED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. DO NOT INSTALL MORE THAN THREE 30 AMP SINGLE PHASE OR FOUR 20 AMP SINGLE PHASE CIRCUITS IN THE SAME CONDUIT.

LEGEND

SYMBOL/ABBREVIATION	DESCRIPTION
▲	SPECIAL EQUIPMENT POWER CONNECTION. EQUIPMENT AS DESIGNATED.
S	MOTOR POWER CONNECTION. EQUIPMENT AS DESIGNATED.
	DISCONNECT SWITCH.
	FUSED DISCONNECT SWITCH.
///	CONDUCTORS IN CONDUIT. CROSS LINES INDICATE NUMBER OF CONDUCTORS.
///	BRANCH CIRCUIT HOMERUN IN CONDUIT. CROSS LINES INDICATE NUMBER OF CONDUCTORS.
SED	EXISTING EMERGENCY SHUT OFF SWITCH
	PANELBOARD
CO	CARBON MONOXIDE DETECTOR.
VFD	VARIABLE FREQUENCY DRIVE.
A	AMPS.
AFF	ABOVE FINISHED FLOOR.
C	CONDUIT.
C/B	CIRCUIT BREAKER.
GFCI	INDICATES DEVICE WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER.
GND.	GROUND.
P	POLE.
WP	WEATHER PROOF.

SCHEDULE OF BRANCH CIRCUIT CONDUCTOR SIZES

C/B SIZE	* CIRCUIT SIZE
20A–1P	** 2 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C.
20A–2P	2 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C.
20A–3P	3 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C.
25A–1P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
25A–2P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
25A–3P	3 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
30A–1P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
30A–2P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
30A–3P	3 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
35A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
35A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
35A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
40A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
40A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
40A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
45A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
45A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
45A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
50A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
50A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
50A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.

* PROVIDE CIRCUIT SIZE AND NUMBER OF CONDUCTORS SCHEDULED UNLESS NOTED OR SHOWN DIFFERENTLY ON THE DRAWINGS.

** PROVIDE #10 AWG SIZE CONDUCTORS FOR BRANCH CIRCUIT RUNS EXCEEDING 75' IN CONDUCTOR LENGTH AND #8 AWG SIZE CONDUCTORS FOR BRANCH CIRCUIT RUNS EXCEEDING 150' IN CONDUCTOR LENGTH.

REVISIONS

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TITLE

MECHANICAL ROOM PART PLAN ELECTRICAL DEMOLITION AND NEW WORK

DATE 08/09/2019

DWG. NO.

E1.1