

3Ø PHASE FEEDER SCHEDULE

GENERAL NOTES:

- 1) WIRE OF #8 AWG SIZE AND LARGER SHALL BE STRANDED. WIRE #10AWG AND SMALLER SHALL BE SOLID
- 2) ALL CONDUCTORS SHALL BE RATED 90DEG. C FOR DRY/WET LOCATIONS.
- 3) INSULATION TYPES SHALL BE AS FOLLOWS:
 - A) CONDUCTORS UP TO #2 AWG. SHALL BE DUAL LISTED THHN/THWN-2
 - B) CONDUCTORS UP #3 AWG AND LARGER SHALL BE LISTED XHHW-2.
 - C) SERVICE ENTRANCE CONDUCTORS SHALL BE LISTED RHW-2.

AMPACITY	CONDUCTOR SIZE 3 WIRE PH-GND-C	AMPACITY	CONDUCTOR SIZE 4 WIRE PH&N-GND-C
20	3#12, 1#12G - 3/4"C.	20	4#12, 1#12G - 3/4"C.
25	3#10, 1#10G - 3/4"C.	25	4#10, 1#10G - 3/4"C.
30	3#10, 1#10G - 3/4"C.	30	4#10, 1#10G - 3/4"C.
35	3#8, 1#10G - 3/4"C.	35	4#8, 1#10G - 3/4"C.
40	3#8, 1#10G - 3/4"C.	40	4#8, 1#10G - 3/4"C.
45	3#8, 1#10G - 3/4"C.	45	4#8, 1#10G - 3/4"C.
50	3#8, 1#10G - 3/4"C.	50	4#8, 1#10G - 3/4"C.
60	3#6, 1#10G - 1"C.	60	4#6, 1#10G - 1"C.
70	3#4, 1#8G - 1"C.	70	4#4, 1#8G - 1 1/4"C.
80	3#4, 1#8G - 1"C.	80	4#4, 1#8G - 1 1/4"C.
90	3#3, 1#8G - 1 1/4"C.	90	4#3, 1#8G - 1 1/4"C.
100	3#3, 1#8G - 1 1/4"C.	100	4#3, 1#8G - 1 1/4"C.

ELECTRICAL SYMBOL LIST *

ELECTRICAL EQUIPMENT

- MOTOR-SEE MOTOR /EQUIPMENT SCHEDULE FOR HP RATING FUSED DISCONNECT SWITCH
- NON-FUSED DISCONNECT SWITCH
- FLUSH MOUNTED BRANCH CIRCUIT PANELBOARD, SURFACE MOUNTED BRANCH CIRCUIT PANELBOARD,
- FLUSH MOUNTED LIGHTING BRANCH CIRCUIT PANELBOARD, SURFACE MOUNTED LIGHTING BRANCH CIRCUIT PANELBOARD,
- DISTRIBUTION PANELBOARD
- SWITCHGEAR, SWITCHBOARD OR MOTOR CONTROL CENTER, DASHED LINES INDICATE FUTURE SECTIONS, ARROW INDICATES FRONT
- DASHED LINES IN FRONT OF EQUIPMENT INDICATES FLOOR AREA, PROVIDE NEC 110.28 CLEARANCES FOR ALL PANELBOARDS AND ELECTRICAL EQUIPMENT. PROVIDE PERMANENT FLOOR MARKINGS & BOLLARDS AS NECESSARY
- MOTOR/EQUIPMENT TAG
- AUTOMATIC TRANSFER SWITCH
- GROUND
- CURRENT TRANSFORMER
- TRANSFORMER
- CUSTOMER OWNED DIGITAL METER
- ELECTRIC UTILITY (COMED) METER
- MAGNETIC MOTOR STARTER
- COMBINATION STARTER/DISCONNECT SWITCH

LIGHTING/LIGHTING CONTROL EQUIPMENT SYMBOLS

- LIGHTING FIXTURE FOR DESCRIPTION SEE LIGHTING FIXTURE SCHEDULE
- LIGHTING FIXTURE AS INDICATED WITH EMERGENCY BATTERY BACK-UP INSTALLED OR WIRED TO EM POWER SOURCE. FOR DESCRIPTION SEE LIGHTING FIXTURE SCHEDULE
- EMERGENCY LIGHTING FIXTURE WITH BATTERY BACK-UP.
- REMOTE EMERGENCY LIGHTING FIXTURE WITH BATTERY BACK-UP.
- WALL SWITCH, LIGHT SWITCH CONTROL AND FEATURES AS NOTED
- LIGHT SWITCH ABBREVIATIONS:
 - "G" LIGHTS CONTROLLED
 - "D" DIMMER SWITCH
 - "EP" EXPLOSION PROOF
 - "K" KEY OPERATED
 - "P" PILOT LIGHT
 - "XX" CIRCUIT NUMBER
 - "WP" WEATHERPROOF
 - "2P" TWO POLE
 - "3P" THREE POLE
 - "3W" THREE-WAY
 - "4W" FOUR-WAY
 - "T" TIME SWITCH
- DAYLIGHT SENSOR
- INDIVIDUAL ROOM PASSIVE OCCUPANCY SENSOR
- DUEL TECHNOLOGY ULTRASONIC MOTION DETECTOR/OCCUPANCY SENSOR
- OPEN AREA OCCUPANCY SENSOR
- CORRIDOR OCCUPANCY SENSOR
- TIME CLOCK
- PHOTOCELL
- MOMENTARY CONTACT SWITCH
- LOW VOLTAGE SWITCH STATION

ELECTRICAL SYMBOL LIST *

WIRING DEVICES

- JUNCTION OR OUTLET BOX IN CEILING OR FLOOR AS NOTED
- JUNCTION OR OUTLET BOX IN WALL
- SIMPLEX RECEPTACLE, 125V, 2 POLE 20A RATING (NEMA 5-20R) UNLESS NOTED OTHERWISE IN WALL, 18" A.F.F. OR AS NOTED.
- DUPLEX RECEPTACLE, 125V, 2 POLE 20A RATING (NEMA 5-20R) UNLESS NOTED OTHERWISE IN WALL, 18" A.F.F. OR AS NOTED.
- GFCI DUPLEX RECEPTACLE, 125V, 2 POLE 20A RATING (NEMA 5-20R) UNLESS NOTED OTHERWISE IN WALL, 18" A.F.F. OR AS NOTED.
- DOUBLE DUPLEX RECEPTACLE, 125V, 2 POLE 20A RATING (NEMA 5-20R) UNLESS NOTED OTHERWISE IN WALL, 18" A.F.F. OR AS NOTED.
- DUPLEX RECEPTACLE, 125V, 2 POLE 20A RATING (NEMA 5-20R) UNLESS NOTED OTHERWISE RECESSED IN CEILING OR AS NOTED.
- DUPLEX RECEPTACLE, 125V, 2 POLE 20A RATING (NEMA 5-20R) UNLESS NOTED OTHERWISE MOUNTED ON FLOOR OR AS NOTED.
- DOUBLE DUPLEX RECEPTACLE, 125V, 2 POLE 20A RATING (NEMA 5-20R) UNLESS NOTED OTHERWISE MOUNTED ON FLOOR OR AS NOTED.
- RECEPTACLE, 125/250V, 1 OR 3Ø, 2 OR 3 POLE, 3 OR 4 WIRE, 20A, 30A, 50A, OR 60A RATING (NEMA 5-20R) AS NOTED IN WALL 18" AFF OR AS NOTED
- SURFACE MOUNTED, MULTIOUTLET STEEL ASSEMBLY WITH NEMA 15A-RATED, RECEPTACLES. RECEPTACLES MOUNTED AT REGULAR INTERVALS AS INDICATED.
- CABLE TELEVISION ANTENNA SYSTEM OUTLET, PROVIDE CONDUIT AS INDICATED TO CATV TERMINAL CABINET. ALL HOMERUNS NO LOOPING. PROVIDE CABLE OUTLET AND TERMINATION.
- SPEAKER

WIRING DEVICES SYMBOL NOTATION

- WP ADJACENT LETTERS IN THE SYMBOLS ABOVE INDICATE THE FOLLOWING:
 - "TR" INDICATES TAMPER RESISTANT (SAFETY TYPE)
 - "CS" INDICATES CHARGING STATION
 - "E" INDICATES RECEPTACLE FED BY EMERGENCY CIRCUIT
 - "EP" INDICATES RECEPTACLE IS EXPLOSION PROOF
 - "EWC" INDICATES RECEPTACLE SERVES ELECTRIC WATER COOLER
 - "GFI" INDICATES RECEPTACLE HAS GROUND FAULT CIRCUIT INTERRUPTER
 - "IG" INDICATES RECEPTACLE HAS ISOLATED GROUND-COMPUTER NETWORK
 - "TVS" INDICATES RECEPTACLE HAS TRANSIENT VOLTAGE SURGE SUPPRESSION
 - "WP" INDICATES RECEPTACLE HAS WATERPROOF COVER
 - "XX" INDICATES RECEPTACLE CIRCUIT NUMBER

RACEWAYS & WIRING

- CONDUIT HOMERUN
 - PHASE
 - NEUTRAL
 - GROUND
- CONDUIT-CONCEALED ABOVE CEILING OR IN WALL
- CONDUIT-CONCEALED IN FLOOR OR IN CEILING BELOW
- CONDUIT-EXPOSED
- CONDUIT-FLEXIBLE
- JUNCTION BOX UNDER FLOOR
- JUNCTION OR OUTLET BOX IN CEILING OR FLOOR AS NOTED
- JUNCTION OR OUTLET BOX IN WALL
- PULLBOX
- CONDUIT TURNED UP
- CONDUIT TURNED DOWN

EQUIPMENT CONNECTION SCHEDULE

NOTES:

- 1) VERIFY FINAL LOCATION OF ALL EQUIPMENT WITH EQUIPMENT INSTALLER BEFORE INSTALLING FEEDERS.
- 2) SEE ARCHITECTURAL, MECHANICAL, PLUMBING AND FIRE PROTECTION DRAWINGS FOR MORE INFORMATION.
- 3) SIZE STARTER/FEEDER DISCONNECT PER FINAL EQUIPMENT REQUIREMENTS.
- 4) PROVIDE FEEDER AS INDICATED, VERIFY WITH EQUIPMENT REQUIREMENTS.
- 5) PROVIDE OVERLOAD PROTECTION (FUSES OR MOTOR CIRCUIT PROTECTOR) PER SPECIFICATIONS, ACTUAL FIELD MEASURED FULL LOAD CURRENT, AND EQUIPMENT MANUFACTURER'S REQUIREMENTS.
- 6) VERIFY FINAL VOLTAGE AND PHASE REQUIREMENTS OF ALL EQUIPMENT WITH INSTALLER BEFORE INSTALLING FEEDERS.
- 7) COORDINATE SHORT CIRCUIT OCD RATING WITH FINAL EQUIPMENT REQUIREMENTS
- 8) PROVIDE LOCAL DISCONNECT WITHIN 5' OF EQUIPMENT.
- 9) NON-STANDARD ITEMS, TIMERS, METERS, INTERLOCKS, ETC.
- 3 FLEXIBLE CONNECTIONS TO MOTORS SHALL BE IN FLEXIBLE CONDUIT. PROVIDE Cu EQUIPMENT GROUND FROM DISCONNECT TO MOTOR CONNECTION.
- 4 SEE MOTOR CONTROL CENTER SCHEDULES FOR EQUIPMENT CONNECTED TO MOTOR CONTROL CENTERS.

TAG	EQUIPMENT DESCRIPTION	HP/KW/AMPS	WIRE / CONDUIT	STARTER/DISCONNECT/OCD	VOLTAGE	FED FROM	LOCAL DISCONNECT	REMARKS
B1	BOILER	12.5 AMP	2 #12 AWG #10 AWG. EQ. GRD. 3/4"	<input checked="" type="checkbox"/> INTEGRAL TO EQUIPMENT <input type="checkbox"/> IN MCC NEMA SIZE <input type="checkbox"/> TYPE	120V, 1Ø	LP-1BM	<input type="checkbox"/> FUSED - A FUSE <input checked="" type="checkbox"/> NON-FUSED 20 A SWITCH <input type="checkbox"/> THERMAL SWITCH, 120V, 1Ø, 1P	
HBP1	BOILER PUMP	7AMP	2 #12 AWG #10 AWG. EQ. GRD. 3/4"	<input checked="" type="checkbox"/> INTEGRAL TO EQUIPMENT <input type="checkbox"/> IN MCC NEMA SIZE <input type="checkbox"/> TYPE	120V, 1Ø	LP-1BM	<input type="checkbox"/> FUSED - A FUSE <input checked="" type="checkbox"/> NON-FUSED 20 A SWITCH <input type="checkbox"/> THERMAL SWITCH, 120V, 1Ø, 1P	
BC1	BOILER CONTROL	5AMP	2 #12 AWG #10 AWG. EQ. GRD. 3/4"	<input checked="" type="checkbox"/> INTEGRAL TO EQUIPMENT <input type="checkbox"/> IN MCC NEMA SIZE <input type="checkbox"/> TYPE	120V, 1Ø	LP-1BM	<input type="checkbox"/> FUSED - A FUSE <input checked="" type="checkbox"/> NON-FUSED 20 A SWITCH <input type="checkbox"/> THERMAL SWITCH, 120V, 1Ø, 1P	

PANEL:	EXISTING LP-1 BM (REFERENCE)	MAIN:	125
PROJECT:	MECHANICAL ROOM	BUS:	CU
LOCATION:	SWITCHBOARD #1	MTG:	SURFACE
FEEDER FROM:	120 2Ø8	PHASE:	3
VOLTAGE:		WIRES:	4

DESCRIPTION	E L R C			VOLT-AMPS			BREAKER			CKT	PHASES			VOLT-AMPS			E L R C			DESCRIPTION		
	Q	T	G	BUS A	BUS B	BUS C	AMP	POLE	#		A	B	C	#	AMP	POLE	BUS A	BUS B	BUS C		Q	T
CHILLER RM CONTROL PNL (MF)							20	1	1				2	20	1							SPARE (MF)
LIGHTING (MF)							20	1	3				4	20	1							RECEPTACLES/BOILER RM (MF)
LIGHTING (MF)							20	1	5				6	20	1							STEAM (FILL) PUMP (MF)
LIGHTING (MF)							20	1	7				8	20	1							CHILLER RM PHONE RM (MF)
EXISTING LOAD (MF)							20	1	9				10	20	1							CHILLER RM PHONE RM (MF)
EXISTING LOAD (MF)							20	1	11				12	20	1							TOILET RECEPTACLE (VF)
SPARE (MF)							20	1	13				14	20	1							SPARE (VF)
							20	3	15				16	20	1							NW CORNER OFFICE (VF)
							20	1	17				18	20	1							NW CORNER OFFICE (VF)
SPARE (VF)							20	1	19				20	20	1							AIR COMPR DRYER (VF)
GENERATOR HEATER (VF)							20	1	21				22	20	1							HUMIDIFIER STEAM BOILER
SPARE (VF)							20	1	23				24	20	1							HW CIRC PUMP (VF)

PANEL:	NEW LP-1 BM (REFERENCE)	MAIN:	125
PROJECT:	MECHANICAL ROOM	BUS:	CU
LOCATION:	SWITCHBOARD #1	MTG:	SURFACE
FEEDER FROM:	120 2Ø8	PHASE:	3
VOLTAGE:		WIRES:	4

DESCRIPTION	E L R C			VOLT-AMPS			BREAKER			CKT	PHASES			VOLT-AMPS			E L R C			DESCRIPTION		
	Q	T	G	BUS A	BUS B	BUS C	AMP	POLE	#		A	B	C	#	AMP	POLE	BUS A	BUS B	BUS C		Q	T
CHILLER RM CONTROL PNL (VF)							20	1	1				2	20	1							SPARE (VF)
LIGHTING (MF)							20	1	3				4	20	1							RECEPTACLES/BOILER RM (VF)
LIGHTING (MF)							20	1	5				6	20	1							STEAM (FILL) PUMP (VF)
LIGHTING (MF)							20	1	7				8	20	1							CHILLER RM PHONE RM (VF)
EXISTING LOAD (VF)							20	1	9				10	20	1							CHILLER RM PHONE RM (VF)
EXISTING LOAD (VF)							20	1	11				12	20	1							TOILET RECEPTACLE (VF)
HBP-1						865	20	1	13				14	20	1							SPARE (VF)
	CONTROL PANEL						600	20	1	15				16	20	1						
RECEPTACLE							20	1	17				18	20	1							NW CORNER OFFICE (VF)
SPARE (VF)							20	1	19				20	20	1							AIR COMPR DRYER (VF)
GENERATOR HEATER (VF)							20	1	21				22	20	1			1500				HUMIDIFIER STEAM BOILER
SPARE (VF)							20	1	23				24	20	1							HW CIRC PUMP (VF)

APPLICABLE CODES

CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING:

ELECTRICAL CODE: INTERNATIONAL ELECTRICAL CODE 2017
 FIRE CODE: INTERNATIONAL FIRE CODE 2018
 LIFE SAFETY CODE: NFPA 2015
 MODEL ENERGY CODE: INTERNATIONAL ENERGY CONSERVATION CODE 2018

ELECTRICAL NOTES

THE PANEL SCHEDULES ARE TO BE COMPLETED BY THE CONTRACTOR AND PLACED IN THE PANEL DOOR

REFER TO MECHANICAL PLANS FOR SIZES OF OCD'S FOR MECHANICAL EQUIPMENT.

ALL CIRCUITS MINIMUM 2#12 AWG. #12 AWG GND, CU.
 30A CIRCUITS MINIMUM 2#10 AWG, #12 AWG GND, CU.
 40A CIRCUITS MINIMUM 2#8 AWG, #10 AWG, GND, CU.
 60A CIRCUITS MINIMUM 2#6 AWG, #10 AWG, GND, CU

INCREASE BRANCH CIRCUIT CONDUCTORS BY ONE SIZE ALL BRANCH CIRCUITS OVER 100 FEET IN LENGTH
 INCREASE FEEDER CONDUCTORS BY ONE SIZE FOR ALL FEEDERS OVER 100 FEET IN LENGTH

LISTED AIC RATINGS FOR EQUIPMENT CAN BE REDUCED BASED ON AVAILABLE SHORT CIRCUIT CURRENT WHEN THAT VALUE IS DETERMINED BY COMMONWEALTH EDISON.

PROVIDE METER SOCKETS THAT ARE CECHA APPROVED.

BRANCH AND FEEDERS DO NOT EXCEED 3% VOLTAGE DROP

MAXIMUM CONDUCTOR AMPACITY FOR CIRCUITS RATED FOR 100 AMPS OR LESS SHALL BE DETERMINED BASED ON THE 60°C AMPACITY OF THE CONDUCTOR USED.

PROVIDE MINIMUM 75°C RATED FEEDER, AND BRANCH CIRCUIT CONDUCTORS. COORDINATE WITH EQUIPMENT TERMINATION RATING AND CEC 110.14.C REQUIREMENTS

PROVIDE DEDICATED NEUTRAL FOR EACH 120V, 1 PHASE CIRCUIT.

1	09-09-22	ISSUE FOR BID
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SHEET TITLE:
ELECTRICAL NOTES AND SCHEDULES

SHEET NUMBER:
E2.1