

ELECTRICAL SYMBOL LIST

LIGHTING SYMBOLS

	LIGHT FIXTURE, RECESSED
	LIGHT FIXTURE, RECESSED - EMERGENCY
	LIGHT FIXTURE, SURFACE MOUNT
	LIGHT FIXTURE, SURFACE MOUNT - EMERGENCY
	LIGHT FIXTURE, STRIP
	LIGHT FIXTURE, STRIP - EMERGENCY
	DOWNLIGHT FIXTURE, RECESSED
	DOWNLIGHT FIXTURE, RECESSED, WALLWASH
	DOWNLIGHT FIXTURE, RECESSED - EMERGENCY
	LIGHT FIXTURE, WALL MOUNT
	LIGHT FIXTURE, CEILING MOUNT
	RECESSED LIGHT FIXTURE, WALL MOUNT
	LIGHT FIXTURE, WALL MOUNT
	LIGHT FIXTURE, WALL SCONCE
	LIGHT FIXTURE, TRACK W/ HEADS AS SHOWN ON PLAN
	EXIT SIGN, UNIVERSAL MOUNT, W/ DIRECTIONAL ARROW
	EXIT SIGN, WALL MOUNT, +8'-0" A.F.F.
	EMERGENCY LIGHT W/ BATTERY PACK, +8'-0" A.F.F.
	FLOOD LIGHT
	AREA LUMINAIRE, WALL MOUNT
	AREA LUMINAIRE, POLE MOUNT
	AREA LUMINAIRE, POST TOP

NOTE: REFER TO SHEET E2.01 FOR SYMBOL INFORMATION REGARDING ARCHITECTURAL LIGHT FIXTURES.

SWITCH SYMBOLS

	SWITCH, SPST +48" A.F.F.
	SWITCH, DPST +48" A.F.F.
	SWITCH, 3-WAY +48" A.F.F.
	SWITCH, 4-WAY +48" A.F.F.
	SWITCH, DIMMER +48" A.F.F.
	PHOTOCELL CONTROL
	OCCUPANCY SENSOR CONTROL

NOTATIONS

	DRAWING NOTE
	DETAIL REFERENCE: TOP=DETAIL NO., BOTTOM=SHEET NO.
	MECHANICAL EQUIPMENT MARK NO. (SEE EQUIPMENT SCHEDULE)
	EQUIPMENT NO. (SEE EQUIPMENT SCHEDULE)

ABBREVIATIONS

'A'	LIGHT FIXTURE TYPE (SEE FIXTURE LIST)	I.G.	ISOLATED GROUND
A.F.F.	ABOVE FINISHED FLOOR	LCP	LIGHTING CONTROL PANEL
A.F.G.	ABOVE FINAL GRADE	MCB	MAIN CIRCUIT BREAKER
A.F.I.	ARC FAULT INTERRUPTER	MLO	MAIN LUGS ONLY
A.T.S.	TRANSFER SWITCH, AUTOMATIC	N.I.C.	NOT IN CONTRACT
C	CONDUIT	N.L.	NIGHT LIGHT
CATV	CABLE TELEVISION	PC	PARTIAL CIRCUIT
CCTV	CLOSED CIRCUIT TELEVISION	PH	PHASE
C.T.	CURRENT TRANSFORMER	T.V.S.S.	TRANSIENT VOLTAGE SURGE SUPPRESSOR
(E)	EXISTING	U.G.	UNDERGROUND
FACP	FIRE ALARM CONTROL PANEL	U.O.N.	UNLESS OTHERWISE NOTED
G.F.I.	GROUND FAULT INTERRUPTER	VFD	VARIABLE FREQUENCY DRIVE
GND	GROUND	W	WIRE
HP	HORSEPOWER	W.G.	WIRE GUARD
		W.P.	WEATHERPROOF

NOTE: SOME OF THE SYMBOLS AND ABBREVIATIONS ON THIS LIST MAY NOT APPLY TO THIS PROJECT.

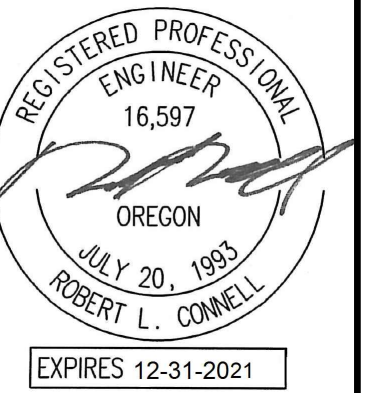
POWER SYMBOLS

	RECEPTACLE, DUPLEX +18" A.F.F.
	RECEPTACLE, QUAD +18" A.F.F.
	RECEPTACLE, DUPLEX +6" ABV COUNTER
	RECEPTACLE, DUPLEX +18" A.F.F. (ONE OUTLET SWITCHED)
	RECEPTACLE, DUPLEX +18" A.F.F. (BOTH OUTLETS SWITCHED)
	RECEPTACLE, DUPLEX, PEDESTAL MOUNT
	RECEPTACLE, DUPLEX, FLUSH FLOOR MOUNT
	RECEPTACLE, SPECIAL (COORDINATE WITH EQUIPMENT SERVED)
	RELAY
	TIME CLOCK CONTROL
	PUSHBUTTON STATION
	JUNCTION BOX
	THERMOSTAT
	TRANSFORMER
	DISCONNECT, NON-FUSED
	DISCONNECT, FUSED
	ELECTRICAL CONNECTION
	ELECTRICAL CONNECTION, SINGLE MOTOR
	ELECTRICAL CONNECTION, MULTI-MOTOR
	ELECTRICAL DISTRIBUTION PANEL, RECESSED
	ELECTRICAL DISTRIBUTION PANEL, SURFACE
	MISCELLANEOUS PANEL, RECESSED
	MISCELLANEOUS PANEL, SURFACE
	FLUSH FLOOR BOX (W/ DEVICES AS SHOWN ON PLAN)

ONE-LINE DIAGRAM SYMBOLS

	ELECTRICAL DISTRIBUTION PANELBOARD (MLO)
	ELECTRICAL DISTRIBUTION PANELBOARD (MCB)
	SUB-FEED CIRCUIT BREAKER
	CIRCUIT BREAKER (TRIP RATING & POLES AS INDICATED ON PLAN)
	GROUND SYSTEM (SIZE AS INDICATED ON PLAN)
	WATER PIPE GROUND ELECTRODE
	TRANSIENT VOLTAGE SURGE SUPPRESSOR
	UTILITY METER & METER BASE
	UTILITY METER CURRENT TRANSFORMER

#	DATE	DESC
	07/20/21	ISSUED FOR PERMITS



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 JOB NO: 221044.00

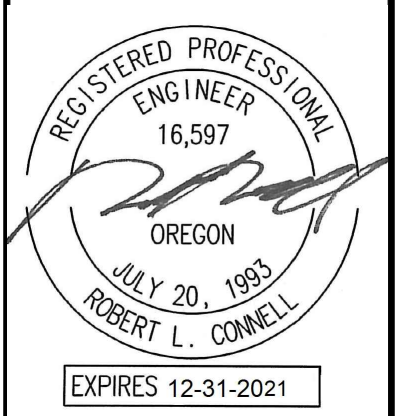
NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
 1245 NE 122ND AVENUE
 PORTLAND, OR 97230

DRAWING TITLE:
ELECTRICAL LEGEND & SCHEDULES
 DRAWN BY: **RL**
 CHECKED BY: **RL**

E1.01

MEDIA INC. Consulting Engineers
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 CONTACT: .

#	DATE	DESC
1	07/20/21	ISSUED FOR PERMITS



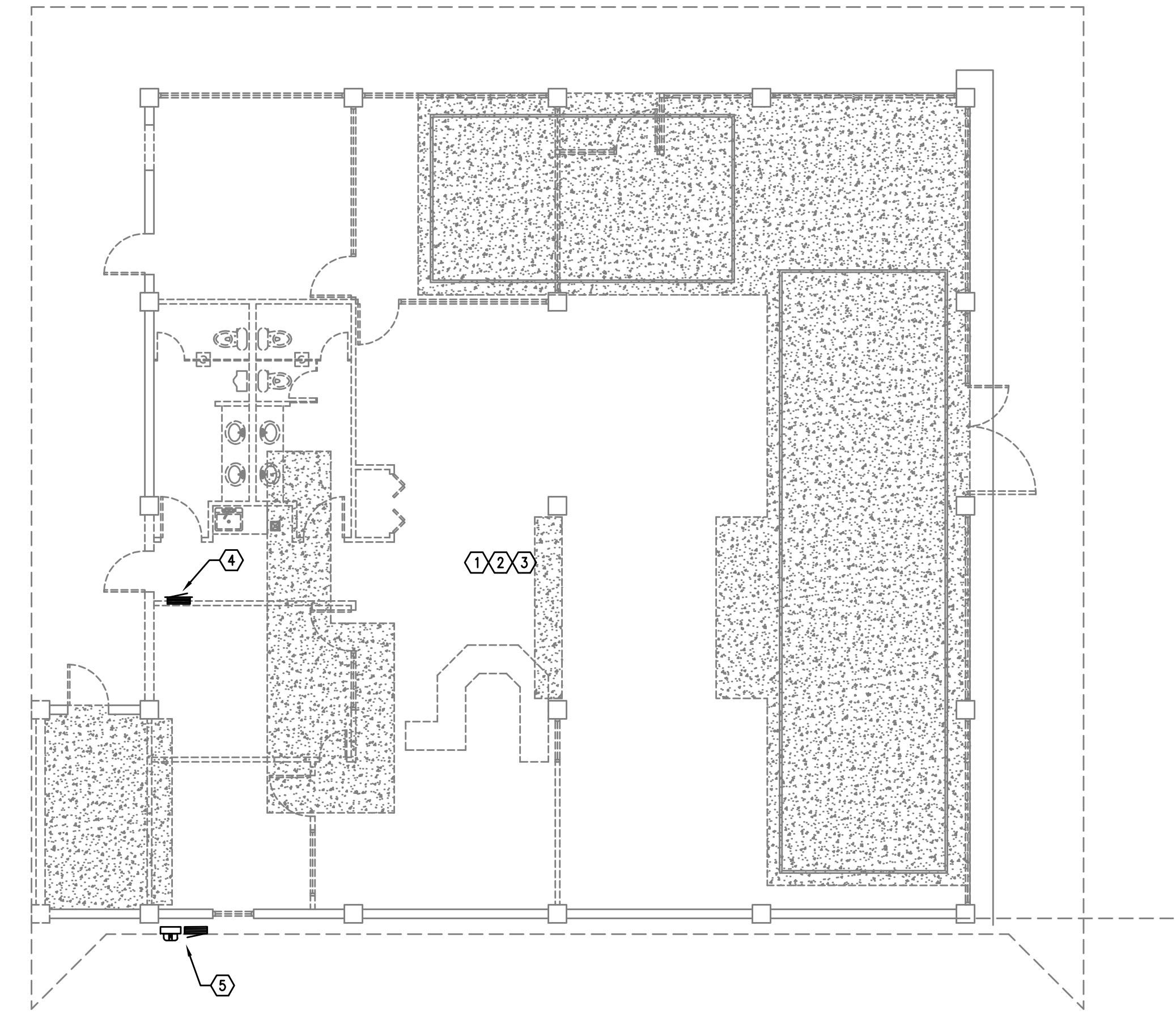
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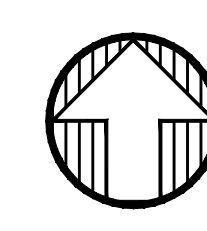
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NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
 1245 NE 122ND AVENUE
 PORTLAND, OR 97230

DRAWING TITLE:
ELECTRICAL DEMOLITION PLAN
 DRAWN BY: **RLC**
 CHECKED BY: **RLC**

E1.03



 **1** ELECTRICAL DEMOLITION PLAN
 E1.03 SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES:

- A. UNLESS OTHERWISE NOTED, ALL PLANS ARE DIAGRAMMATICAL. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AS THEY RELATE TO THE PROJECT PRIOR TO THE START OF ANY WORK.
- B. UNLESS OTHERWISE NOTED, REMOVE ALL ELECTRICAL DEVICES AND ASSOCIATED ITEMS IN CONFLICT WITH NEW CONSTRUCTION. MODIFY CIRCUITING AS REQUIRED TO MAINTAIN FEED TO DOWNSTREAM DEVICES OR FIXTURES TO REMAIN.
- C. COORDINATE WITH THE MECHANICAL CONTRACTOR FOR DISCONNECTION/RECONNECTION OF ANY AND ALL MECHANICAL EQUIPMENT TO BE REMOVED OR REPLACED.

DEMOLITION SHEET NOTES:

- 1. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES TO AREAS SCHEDULED FOR REMOVAL. REMOVE WIRING AS FAR BACK AS NECESSARY (IE: NEAREST DEVICE TO REMAIN).
- 2. DISCONNECT POWER TO MECHANICAL EQUIPMENT TO BE REMOVED AND/OR REPLACED. MAINTAIN EXISTING CIRCUIT CONDUCTORS FOR RECONNECTION OF REPLACED EQUIPMENT. CONDUCTORS FEEDING EQUIPMENT TO BE REMOVED IN ITS ENTIRETY, SHALL BE REMOVED AS FAR BACK TO THE SOURCE AS POSSIBLE AND DISCONNECTED FROM THE BRANCH PANEL SERVICE THAT CIRCUIT.
- 3. DISCONNECT AND REMOVE CEILING LIGHT FIXTURES TO BE REPLACED. CONSULT ARCHITECT PRIOR TO THE START OF ANY WORK TO IDENTIFY ANY LIGHT FIXTURES TO BE REUSED OR SALVAGED. COORDINATE WORK WITH ARCHITECT AND OTHER TRADES.
- 4. EXISTING BRANCH PANEL TO BE REMOVED. ANY CIRCUITS THAT ARE TO REMAIN, THAT ARE SERVED FROM THIS PANEL SHALL BE DISCONNECTED AND RETAINED FOR RECONNECTION. PANEL SHALL BE INSPECTED AND IF DETERMINED TO BE IN GOOD CONDITION AND IN COMPLIANCE WITH CURRENT CODE REQUIREMENTS, SHALL BE RELOCATED AND THE CIRCUITS EXTENDED AND RECONNECTED. IF RELOCATION IS NOT APPROPRIATE, THE PANEL WILL BE REPLACED AND ALL RETAIN CIRCUITS WILL BE REROUTED.
- 5. EXISTING BRANCH PANEL AND SERVICE ENTRANCE EQUIPMENT TO REMAIN UNCHANGED.

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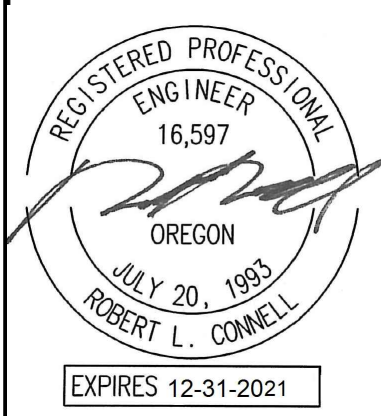
LIGHTING FIXTURE LIST					
TYPE	LAMP	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	OPTIONS
D1 D1E	LED 3000K 2000-2500LM 28W	GOIHAM PORTFOLIO (OR APPROVED OTHER)	IC04SQ SERIES LDS048 SERIES	TYPE :4" SQUARE DOWNLIGHT MOUNTING :RECESSED HOUSING :STEEL LENS/REFL :SEMI-SPECULAR CLEAR REFLECTOR VOLTAGE :MVOLT BALLAST :LED DRIVER	D1E INCLUDES EMERGENCY BATTERY BACKUP. LOCATION:
D2 D2E	LED 3000K 2500-2800LM 45W	GOIHAM PORTFOLIO (OR APPROVED OTHER)	IC04SQADJ SERIES LDS044A SERIES	TYPE :4" SQUARE ADJUSTABLE DOWNLIGHT MOUNTING :RECESSED HOUSING :STEEL LENS/REFL :SEMI-SPECULAR CLEAR REFLECTOR VOLTAGE :MVOLT BALLAST :LED DRIVER	D2E INCLUDES EMERGENCY BATTERY BACKUP. FIELD AIM PER ARCHITECT DIRECTION LOCATION:
D3	LED 3000K (HIGH LUMEN) 32W/HEAD	AMERILUX FUSION (OR APPROVED OTHER)	CYLINDRIX III SERIES FC2 SERIES	TYPE :TWIN ADJUSTABLE DOWNLIGHT MOUNTING :RECESSED HOUSING :STEEL LENS/REFL : VOLTAGE :MVOLT BALLAST :LED DRIVER	FIELD AIM PER ARCHITECT DIRECTION NARROW SPOT DISTRIBUTION 15 DEGREE LOCATION:
D4	LED 3000K (LOW LUMEN) 12W/HEAD	AMERILUX RSA (OR APPROVED OTHER)	HORNET SERIES MR23 SERIES	TYPE :TRIPLE ADJUSTABLE DOWNLIGHT MOUNTING :RECESSED HOUSING :STEEL LENS/REFL : VOLTAGE :MVOLT BALLAST :LED DRIVER	FIELD AIM PER ARCHITECT DIRECTION MEDIUM DISTRIBUTION 25 DEGREE LOCATION:
D5	LED 3000K (HIGH LUMEN) 32W/HEAD	AMERILUX FUSION (OR APPROVED OTHER)	CYLINDRIX III SERIES FC4 SERIES	TYPE :QUAD ADJUSTABLE DOWNLIGHT MOUNTING :RECESSED HOUSING :STEEL LENS/REFL : VOLTAGE :MVOLT BALLAST :LED DRIVER	FIELD AIM PER ARCHITECT DIRECTION NARROW SPOT DISTRIBUTION 15 DEGREE LOCATION:
L1	LED 4000K 15000LM 95W	LITHONIA FLEX LIGHTING (OR APPROVED OTHER)	IBG SERIES ESSENTIALS SERIES	TYPE :HIGH BAY MOUNTING :SUSPENDED (+17FT AFF) HOUSING :STEEL LENS/REFL :CLEAR VOLTAGE :MVOLT BALLAST :LED DRIVER	 LOCATION:
L2E	LED 4000K 18000LM 110W	LITHONIA FLEX LIGHTING (OR APPROVED OTHER)	IBG SERIES ESSENTIALS SERIES	TYPE :HIGH BAY MOUNTING :SUSPENDED (+17FT AFF) HOUSING :STEEL LENS/REFL :CLEAR VOLTAGE :MVOLT BALLAST :LED DRIVER	PROVIDE WITH EMERGENCY BATTERY BACKUP LOCATION:
L3	LED 4000K 8000LM 54W	LITHONIA FLEX LIGHTING (OR APPROVED OTHER)	CLX SERIES LINEAR SERIES	TYPE :8FT INDUSTRIAL STRIP MOUNTING :SUSPENDED (+10FT AFF) HOUSING :STEEL LENS/REFL :CLEAR VOLTAGE :MVOLT BALLAST :LED DRIVER	WIDE DISTRIBUTION LOCATION:
L4	LED 3000K 1.3W/FT	JESCO (OR APPROVED OTHER)	DL-FLEX2-UP SERIES	TYPE :FLEXIBLE LINEAR LIGHT FIXTURE MOUNTING :SURFACE HOUSING : LENS/REFL :FROSTED LENS VOLTAGE :24V DC BALLAST :LED DRIVER-REMOTE	CONSEALED IN TOE-KICK REFER TO ARCHITECTURAL INTERIOR ELEVATIONS & SECTIONS FOR ADDITIONAL MOUNTING INFO. LOCATION: TOE-KICK
L6	LED 3000K 600LM/FT MIN. 7W/FT	NEO-RAY SELUX (OR APPROVED OTHER)	DEFINE 5" SERIES M130 SERIES	TYPE :LINEAR LIGHT FIXTURE MOUNTING :RECESSED HOUSING : LENS/REFL :SATIN LENS VOLTAGE :MVOLT BALLAST :LED DRIVER	REFER TO LIGHTING PLANS FOR FIXTURE LENGTHS. LOCATION:
L7	LED 3000K 1.3W/FT	JESCO (OR APPROVED OTHER)	DL-FLEX2-UP SERIES	TYPE :FLEXIBLE LINEAR LIGHT FIXTURE MOUNTING :SURFACE HOUSING : LENS/REFL :FROSTED LENS VOLTAGE :24V-DC BALLAST :LED DRIVER-REMOTE	DRIVER CONSEALED IN LIGHT WELL. REFER TO ARCHITECTURAL INTERIOR ELEVATIONS & SECTIONS FOR ADDITIONAL MOUNTING INFO. MATTE WHITE FINISH LOCATION: COVE
L8	LED 3000K 1.3W/FT	JESCO (OR APPROVED OTHER)	DL-FLEX2-UP SERIES	TYPE :FLEXIBLE LINEAR LIGHT FIXTURE MOUNTING :SURFACE HOUSING : LENS/REFL :FROSTED LENS VOLTAGE :24V-DC BALLAST :LED DRIVER-REMOTE	DRIVER TO BE CONSEALED. MAX. RUN 30FT FOR NORMAL OUTPUT. MATTE WHITE FINISH LOCATION: COVE

LIGHTING FIXTURE LIST					
TYPE	LAMP	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	OPTIONS
L9	LED 3000K 2.5W/FT	JESCO (OR APPROVED OTHER)	INFINA 2.0 ECO SERIES	TYPE :FLEXIBLE LINEAR LIGHT MOUNTING :SURFACE HOUSING : LENS/REFL : VOLTAGE :120V BALLAST :LED DRIVER	NOT FIELD CUT-ABLE/150FT MAX. RUN. REFER TO ARCHITECTURAL SIGNAGE DETAILS FOR ADDITIONAL MOUNTING INFORMATION. LOCATION: EXTERIOR BEZEL LIGHTING
L10	LED 3000K 1.3W/FT	JESCO (OR APPROVED OTHER)	DL-FLEX-METCC SERIES	TYPE :FLEXIBLE LINEAR LIGHT MOUNTING :SURFACE HOUSING : LENS/REFL : VOLTAGE :24V DC BALLAST :LED DRIVER - REMOTE	CONSEAL DRIVER REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL MOUNTING INFORMATION. MAX. RUN 30FT LOCATION: EXTERIOR STAIR LIGHTING
L11	LED 4000K 15000LM 123W	COLUMBIA LIGHTING (OR APPROVED OTHER)	LXEW SERIES	TYPE :ENCLOSED INDUSTRIAL STRIP MOUNTING :SUSPENDED (+17FT AFF) HOUSING : LENS/REFL :CLEAR IMPACT RESIST ACRYLIC VOLTAGE :MVOLT BALLAST :LED DRIVER	 LOCATION:
L12	LED 3000K 14W/HEAD	BRUCK (OR APPROVED OTHER)	VA SERIES TRACK CALIBER SERIES TRACKHEAD	TYPE :MONORAIL TRACK LIGHTS MOUNTING :SURFACE HOUSING : LENS/REFL : VOLTAGE :12V AC-DC BALLAST :LED DRIVER	FIELD AIM PER OWNER'S DIRECTION. LOCATION:
L13	LED 3000K 5W/FT	FLUXWERX (OR APPROVED OTHER)	NOTCH 2-AREA 100 SERIES	TYPE :LINEAR LIGHT FIXTURE MOUNTING :RECESSED HOUSING :TRIMLESS LENS/REFL :SATIN LENS VOLTAGE :MVOLT BALLAST :LED DRIVER-REMOTE	REFER TO LIGHTING PLAN FOR FIXTURE LENGTHS. LOCATION: CEILING CLOUD PERIMETER
L14	LED 4000K 3000LM 28W	METAUX (OR APPROVED OTHER)	CRUZE SERIES	TYPE :2X2 TROFFER MOUNTING :RECESSED HOUSING :STEEL LENS/REFL :FROSTED ACRYLIC VOLTAGE :MVOLT BALLAST :LED DRIVER	 LOCATION:
L15	LED 4000K 3000LM 21W	LITHONIA FLEX LIGHTING (OR APPROVED OTHER)	CLX SERIES LINEAR SERIES	TYPE :8FT INDUSTRIAL STRIP MOUNTING :SURFACE HOUSING :STEEL LENS/REFL :CLEAR VOLTAGE :MVOLT BALLAST :LED DRIVER	WIDE DISTRIBUTION LOCATION:
L16	LED 3000K 13W	TBD (OR APPROVED OTHER)	TBD	TYPE :MINI-PENDNT MOUNTING :SUSPENDED HOUSING :STEEL LENS/REFL :GLASS VOLTAGE :MVOLT BALLAST :LED DRIVER	VERIFY MOUNTING HEIGHT LOCATION:
X	LED --W	TBD (OR APPROVED OTHER)	TBD	TYPE :EXIT SIGN MOUNTING :UNIVERSAL HOUSING : LENS/REFL : VOLTAGE :MVOLT BALLAST :NICKLE CADMIUM BATTERY	 LOCATION:

GENERAL LIGHTING NOTES:

- WHEREVER POSSIBLE, SELECTED LIGHT FIXTURES SHALL HAVE ENERGY EFFICIENT LAMPS, BALLASTS & DRIVERS AND/OR HAVE ENERGY COMPLIANT RATINGS SUCH AS DLC, ENERGY STAR, ETC.
- VERIFY ALL FIXTURE FINISHES WITH ARCHITECT PRIOR TO BID.
- VERIFY ALL FIXTURE LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECT PRIOR TO ROUGH IN.
- ALL LIGHTING SHALL BE 3000 KELVIN UNLESS OTHERWISE NOTED.
- ALL PRODUCT SUBSTITUTIONS AND VALUE ENGINEERING SHALL BE SUBMITTED DURING BID PHASE, SHALL MEET DESIGN INTENT AND ARE SUBJECT TO OWNER APPROVAL.
- EGRESS LIGHTING SHALL BE PROVIDED TO MEET MINIMUM LIGHT LEVELS AS DESCRIBED PER OREGON STRUCTURAL SPECIALTY CODE 1006.3.
- BUILDING EXTERIOR SHALL BE CONTROLLED VIA PHOTOCCELL, EITHER INTEGRAL OR REMOTE, OR BY TIME CLOCK FOR DUSK-TILL-DAWN OPERATION.

DATE DESC
07/20/21 ISSUED FOR PERMITS



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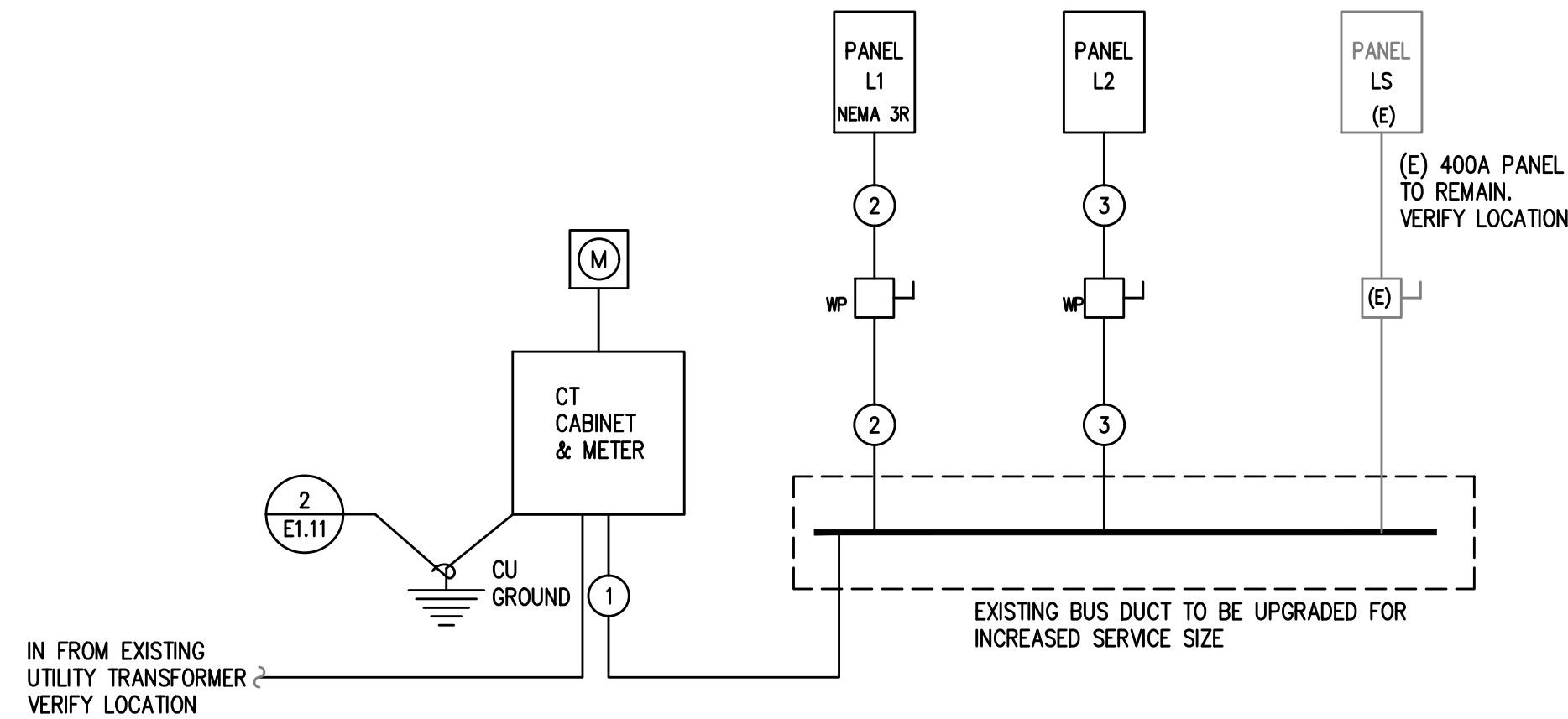
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NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
1245 NE 122ND AVENUE
PORTLAND, OR 97230

DRAWING TITLE:
LIGHTING SCHEDULE
DRAWN BY:
CHECKED BY: **RF**

E1.04

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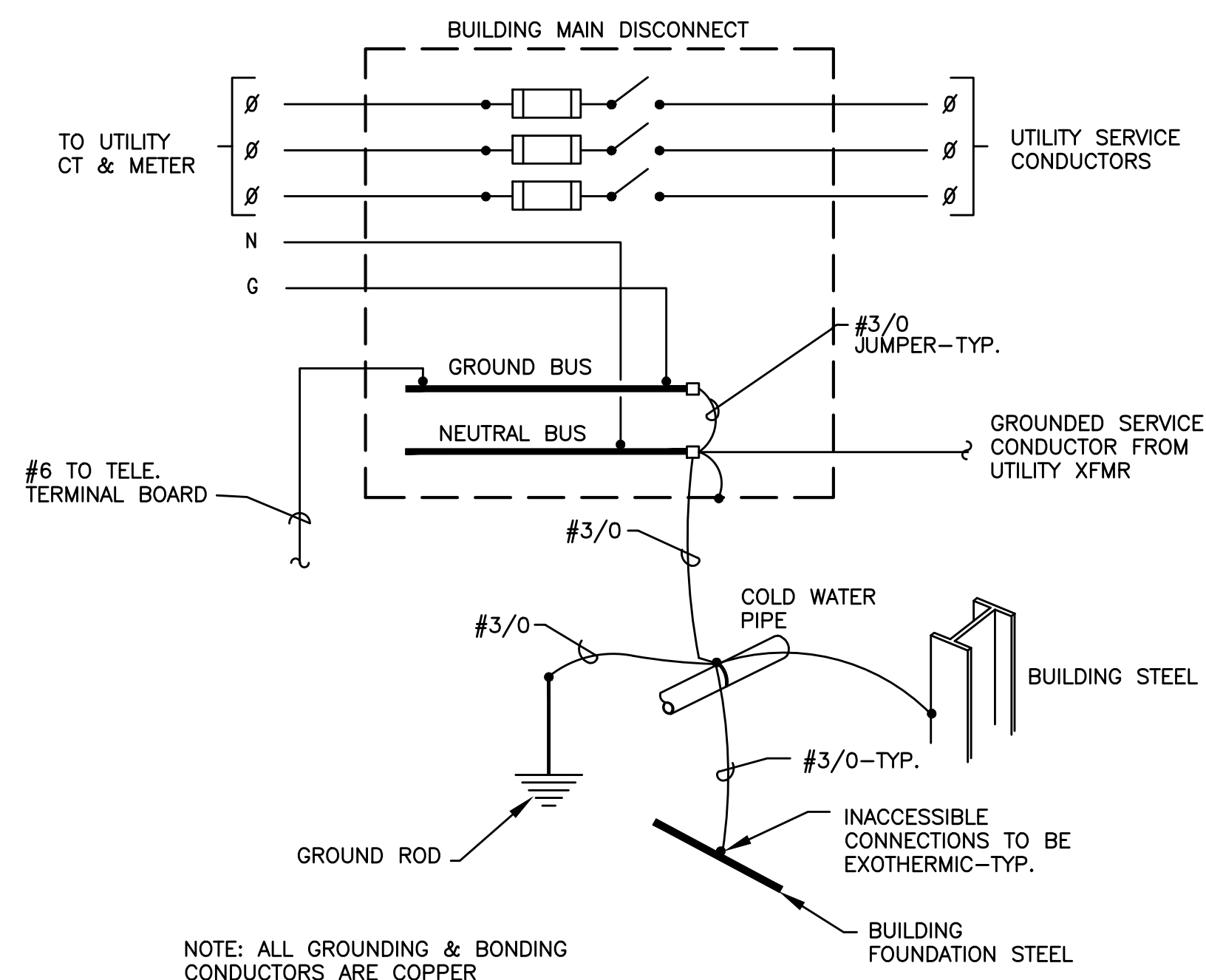
EXISTING ELECTRICAL SERVICE BELIEVED TO BE 600A, 208Y/120V, 3P, 4W. PROPOSED SERVICE INCREASE TO 800A, 208Y/120V, 3P, 4W.

1 ELECTRICAL ONE-LINE DIAGRAM

E1.11 208Y/120V, 3P, 4W

ONE-LINE GENERAL NOTES:

- COORDINATE ALL WORK ASSOCIATED WITH ELECTRIC SERVICE WITH LOCAL UTILITY. PROVIDE ALL CONDUIT & CONDUCTORS, GROUNDING, TRANSFORMER VAULT/PAD, ETC., IN ACCORDANCE WITH SERVING UTILITY REQUIREMENTS.
- COORDINATE METERING REQUIREMENTS WITH UTILITY.
- FOR BRANCH PANEL FEEDER LENGTHS GREATER THAN 150'-0" FROM METER CENTER, INCREASE WIRE SIZE ONE SIZE UP FOR VOLTAGE DROP.



2 GROUNDING/BONDING DETAIL

E1.11 NO SCALE

MFIA PANEL SCHEDULE											
panel L1	mounting SURFACE	location BLDG EXTERIOR	connected load amps		service						
			calculated load amps	0							
120/208V (SCCR: 42KAIC)	phase 3	400A	MCB		0						
a/p	no.	a b c	no.	a/p	va						
C											
	20/1	1	*	2	20/1						
	20/1	3	*	4	20/1						
	20/1	5	*	6	20/1						
6	60/3	7	*	8	60/3						
6	*	9	*	10	*						
6	*	11	*	12	*						
5	40/2	13	*	14	20/1						
5	*	15	*	16	20/1						
	20/1	17	*	18	20/1						
	20/1	19	*	20	20/1						
	20/1	21	*	22	20/1						
	20/1	23	*	24	20/1						
	20/1	25	*	26	20/1						
	27	*	28								
	29	*	30								
	31	*	32								
	33	*	34								
	35	*	36								
	37	*	38								
	39	*	40								
	41	*	42								
Phase A	0 VA	NOTES:			line-line voltage						
Phase B	0 VA				208						
Phase C	0 VA				largest motor (va)						
Total Connected	0 VA				0						
load code:	ph. A	ph. B	ph. C	total	factor						
1. LIGHTS=	0	0	0	0	1.25						
2. RECEPT.=	0	0	0	0	1 + 0.5						
3. HEATING=	0	0	0	0	1.00						
4. KITCHEN=	0	0	0	0	1.00						
5. EQUIP =	0	0	0	0	1.00						
6. MOTORS=	0	0	0	0	*						
7. MISC=	0	0	0	0	1.00						
(* 125% of the largest motor + 100% of the balance)					TOTAL =						
					0						

MFIA PANEL SCHEDULE											
panel L2	mounting FLUSH	location	connected load amps		service						
			calculated load amps	59							
120/208V	phase 3	200A	MLO		59						
a/p	no.	a b c	no.	a/p	va						
C											
1	20/1	1	*	2	20/1						
1	20/1	3	*	4	20/1						
1	20/1	5	*	6	20/1						
1	20/1	7	*	8	20/1						
1	20/1	9	*	10	20/1						
1	20/1	11	*	12	20/1						
1	20/1	13	*	14	20/1						
	20/1	15	*	16	20/1						
5	20/1	17	*	18	20/1						
5	1500	20/1	19	*	20	20/1					
5	1500	20/1	21	*	22	20/1					
5	1500	20/1	23	*	24	20/1					
5	1500	20/1	25	*	26	20/1					
6	1500	20/1	27	*	28	30/2					
6	1500	20/1	29	*	30	*					
		31	*	32	30/2						
		33	*	34	*						
		35	*	36	20/1						
		37	*	38							
		39	*	40							
		41	*	42							
Phase A	6250 VA	NOTES:			line-line voltage						
Phase B	7500 VA				208						
Phase C	7650 VA				largest motor (va)						
Total Connected	21400 VA				0						
load code:	ph. A	ph. B	ph. C	total	factor						
1. LIGHTS=	0	0	0	0	1.25						
2. RECEPT.=	0	0	0	0	1 + 0.5						
3. HEATING=	2250	4500	3650	10400	1.00						
4. KITCHEN=	0	0	0	0	1.00						
5. EQUIP =	4000	1500	2500	8000	1.00						
6. MOTORS=	0	1500	1500	3000	*						
7. MISC=	0	0	0	0	1.00						
(* 125% of the largest motor + 100% of the balance)					TOTAL =						
					21400						

FEEDER SCHEDULE (COPPER)				
NO.	AMPS	CONDUIT	CONDUCTOR	
①	800A	2-3 1/2"	(4) #600 MCM	& (1) #1/0 GND
②	400A	3 1/2"	(4) #500 MCM	& (1) #2 GND
③	200A	2"	(4) #3/0	& (1) #6 GND

FEEDER SCHEDULE (ALUMINUM)				
NO.	AMPS	CONDUIT	CONDUCTOR	
①	205A	2-1/2"	(4) #250kcmil (Al)	& (1) #4 GND
②	410A	(2)3"ea w/	(4) #250kcmil (Al)	& (1) #1 GND
③	800A	(3)3"ea w/	(4) #400kcmil (Al)	& (1) #3/0 GND

MECHANICAL EQUIPMENT SCHEDULE									
NO.	EQUIPMENT NAME	HP/KW	VOLTS	PH	AMPS	CONDUIT	WIRE	GND	CIRCUIT
EF-1	EXHAUST FAN NO.1	1/10HP	120	1		1/2"	#12	#12	SEE E3.02
EF-2	EXHAUST FAN NO.2	9.6W	120	1		1/2"	#12	#12	SEE E3.01
EF-3	EXHAUST FAN NO.3	1/4HP	120	1		1/2"	#12	#12	SEE E3.01
RTU-1	ROOF TOP UNIT NO.1		208	3	(60A MOCP) 1"		#4	#10	SEE E3.02
RTU-2	ROOF TOP UNIT NO.2		208	3	(60A MOCP) 1"		#4	#10	SEE E3.02
WH-1	WATER HEATER NO.1	4.5KW	208	1	(30A MOCP) 1/2"		#10	#10	SEE E3.01
WH-2	WATER HEATER NO.2	1.4KW	120	1	(20A MOCP) 1/2"		#12	#12	SEE E3.01

GENERAL MECHANICAL EQUIPMENT NOTES:

- CONTRACTOR/DESIGNER SHALL VERIFY ALL MECHANICAL EQUIPMENT CONNECTION LOAD REQUIREMENTS WITH THE MECHANICAL EQUIPMENT PROVIDER PRIOR TO ROUGH IN.
- MECHANICAL EQUIPMENT SIZES SHOWN IN THE MECHANICAL SCHEDULE ABOVE ARE FOR REFERENCE ONLY AND MAY NOT REFLECT THE ACTUAL EQUIPMENT TO BE INSTALLED.
- INDOOR & OUTDOOR COMPONENTS OF THE MINI-SPLIT SYSTEMS ARE INTERCONNECTED. CONSULT WITH AND COORDINATE THE ELECTRICAL REQUIREMENTS AND EXACT LOCATIONS WITH THE HVAC EQUIPMENT INSTALLER PRIOR TO ROUGH IN.
- REFER TO TYPICAL UNIT PLAN LOAD CENTER SCHEDULES ON THIS SHEET FOR CIRCUITING INFORMATION.

DATE DESC
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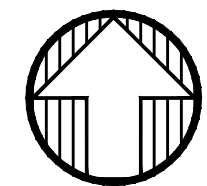
NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
1245 NE 122ND AVENUE
PORTLAND, OR 97230

DRAWING TITLE:
ELECTRICAL
ONE-LINE & SCHEDULES
DRAWN BY: **RAF**
CHECKED BY: **RAF**

E1.11

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1 ELECTRICAL LIGHTING PLAN
 E2.01 SCALE: 1/8" = 1'-0"

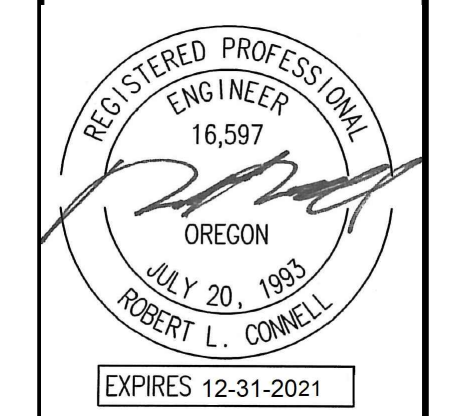
GENERAL LIGHTING NOTES:

- A. ELECTRICAL DRAWINGS ARE DIAGRAMMATICAL AND MAY NOT ACCURATELY REFLECT ACTUAL CONSTRUCTION CONDITIONS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, WITH ALL TRADES PRIOR TO AND DURING CONSTRUCTION.
- B. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND FINISHES OF DEVICES AND FIXTURES.
- D. REFER TO SHEET E1.04 FOR LIGHT FIXTURE SCHEDULE.
- E. VERIFY LIGHT FIXTURES DESIGNATED FOR EGRESS. EGRESS LIGHTING TO MEET MINIMUM LIGHT LEVELS PER NFPA 110 CHAPTER 7.
- F. PROVIDE LIGHTING CONTROL SYSTEM(S) PER OWNER'S DIRECTION. REFER TO ARCHITECT FOR CONTROL TYPE FOR EACH AREA.
- G. PROVIDE DAY-LIGHTING CONTROL FOR LIGHT FIXTURES NEAR GLAZING.
- H. PROVIDE DUSK-TILL-DAW LIGHTING CONTROL FOR EXTERIOR BUILDING LIGHTS.
- I. OCCUPANCY SENSORS SHALL TURN ON LIGHTS TO 100% OUTPUT UPON DETECTION OF ACTIVITY AND TURN OFF A MINIMUM OF 30 MINUTES AFTER VACANCY.

KEYED NOTES:

- 1. PROVIDE POWER CONNECTION FOR LED COVE LIGHTING IN THIS SPACE. REFER TO ARCHITECTURAL DETAILS FOR FIXTURE INSTALLATION INFORMATION.
- 2. FIXTURE RECESSED IN FLOOR. REFER TO ARCHITECTURAL DETAILS FOR FIXTURE INSTALLATION INFORMATION.

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 REGISTERED PROFESSIONAL ENGINEER
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 JULY 20, 1991
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NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
 1245 NE 122ND AVENUE
 PORTLAND, OR 97230

DRAWING TITLE:
ELECTRICAL LIGHTING PLAN
 DRAWN BY:
 CHECKED BY:

E2.01

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1 ELECTRICAL POWER PLAN
 E3.01 SCALE: 1/8" = 1'-0"

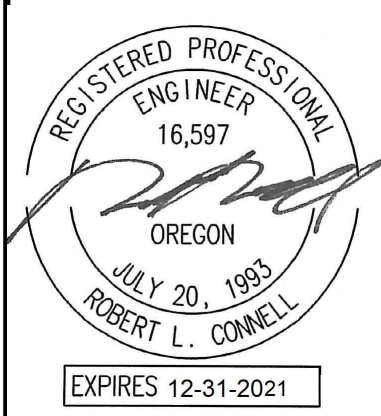
GENERAL POWER NOTES:

- A. ELECTRICAL DRAWINGS ARE DIAGRAMMATICAL AND MAY NOT ACCURATELY REFLECT ACTUAL CONSTRUCTION CONDITIONS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, WITH ALL TRADES PRIOR TO AND DURING CONSTRUCTION.
- B. WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES.
- C. COORDINATE WITH DIVISION 23 FOR EXACT LOCATION AND POWER REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH IN. REFER TO SHEET E1.11 FOR MECHANICAL EQUIPMENT SCHEDULE.
- D. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND FINISHES OF DEVICES AND FIXTURES.
- E. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE LOW VOLTAGE SYSTEMS INSTALLER TO PROVIDE ROUGH-IN FOR DEVICES.
- F. PER OREGON ENERGY CODE, 50% OF OFFICE RECEPTACLES SHALL BE CONTROLLED VIA OCCUPANCY SENSOR OR TIMER TO REDUCE ENERGY CONSUMPTION DURING PERIODS OF INACTIVITY.

KEYED POWER NOTES:

- 1. POWER CONNECTION FOR TOE-KICK COVE LIGHTS. REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL MOUNTING INFORMATION. VERIFY FIXTURE TYPE TO BE INSTALLED. SEE FIXTURE SCHEDULE ON SHEET E1.04.
- 2. POWER CONNECTION FOR HAND DRYER. SEE PANEL SCHEDULE ON SHEET E1.11 FOR CIRCUITING INFO.
- 3. REFER TO MECHANICAL PLANS FOR THERMOSTAT INFORMATION. ELECTRICAL CONTRACTOR TO PROVIDE DIGITAL THERMOSTATS NOT PROVIDED BY THE MECHANICAL CONTRACTOR. PROVIDE ROUGH-IN LOCATION PER ARCHITECT'S DIRECTION. PROVIDE FINAL WIRE CONNECTIONS.
- 4. PROVIDE ON WEATHERPROOF, GFCI RATED 20A DUPLEX RECEPTACLE WITHIN 25'-0" OF ROOF TOP MECHANICAL EQUIPMENT. CIRCUIT AS INDICATED.
- 5. PROVIDE ONE 20A QUAD RECEPTACLE FOR WATER WALL FEATURE PER DESIGNER'S REQUIREMENTS. CONSULT DESIGNER/INSTALLER PRIOR TO THE START OF ANY WORK AND COORDINATE EXACT LOCATION PRIOR TO ROUGH IN. CIRCUIT AS INDICATED.
- 6. EXISTING UTILITY SERVICE TO BE UPGRADED. THE EXISTING CT, METER, DISCONNECTS AND BUS DUCT SHALL BE REPLACED TO SUPPORT SERVICE INCREASE. REFER TO ONE-LINE DIAGRAM ON E1.11.
- 7. REPLACED BRANCH PANEL "L1" TO HAVE NEMA 3R ENCLOSURE. REFER TO ONE-LINE DIAGRAM ON SHEET E1.11.

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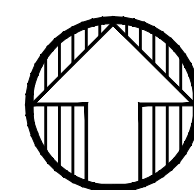
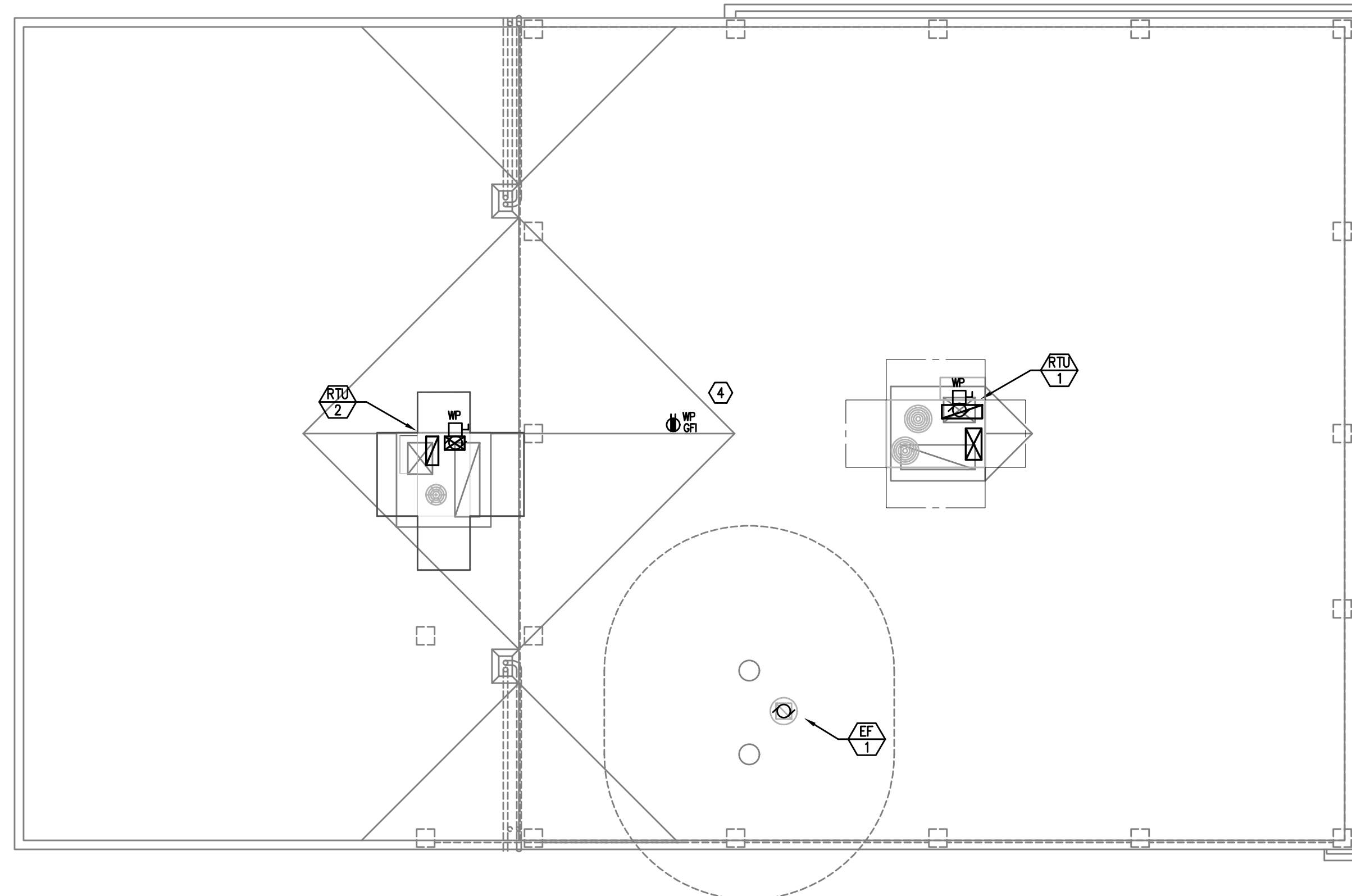
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NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
 1245 NE 122ND AVENUE
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DRAWING TITLE:
ELECTRICAL POWER PLAN
 DRAWN BY: **RF**
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E3.01

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1 ROOF LEVEL POWER PLAN
E3.02 SCALE: 1/8" = 1'-0"

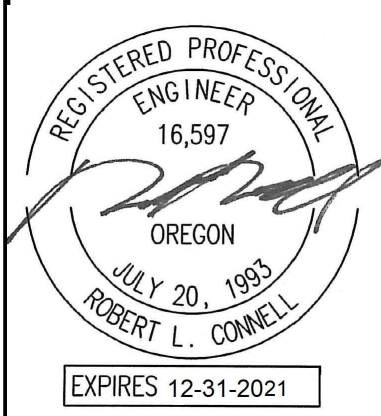
GENERAL POWER NOTES:

- A. ELECTRICAL DRAWINGS ARE DIAGRAMMATICAL AND MAY NOT ACCURATELY REFLECT ACTUAL CONSTRUCTION CONDITIONS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT, WITH ALL TRADES PRIOR TO AND DURING CONSTRUCTION.
- B. WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES.
- C. COORDINATE WITH DIVISION 23 FOR EXACT LOCATION AND POWER REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH IN. REFER TO SHEET E1.11 FOR MECHANICAL EQUIPMENT SCHEDULE.
- D. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND FINISHES OF DEVICES AND FIXTURES.
- E. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE LOW VOLTAGE SYSTEMS INSTALLER TO PROVIDE ROUGH-IN FOR DEVICES.
- F. PER OREGON ENERGY CODE, 50% OF OFFICE RECEPTACLES SHALL BE CONTROLLED VIA OCCUPANCY SENSOR OR TIMER TO REDUCE ENERGY CONSUMPTION DURING PERIODS OF INACTIVITY.

KEYED POWER NOTES:

- 1. POWER CONNECTION FOR TOE-KICK COVE LIGHTS. REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL MOUNTING INFORMATION. VERIFY FIXTURE TYPE TO BE INSTALLED. SEE FIXTURE SCHEDULE ON SHEET E1.04.
- 2. POWER CONNECTION FOR HAND DRYER. SEE PANEL SCHEDULE ON SHEET E1.11 FOR CIRCUITING INFO.
- 3. REFER TO MECHANICAL PLANS FOR THERMOSTAT INFORMATION. ELECTRICAL CONTRACTOR TO PROVIDE DIGITAL THERMOSTATS NOT PROVIDED BY THE MECHANICAL CONTRACTOR. PROVIDE ROUGH-IN LOCATION PER ARCHITECT'S DIRECTION. PROVIDE FINAL WIRE CONNECTIONS.
- 4. PROVIDE ON WEATHERPROOF, GFCI RATED 20A DUPLEX RECEPTACLE WITHIN 25'-0" OF ROOF TOP MECHANICAL EQUIPMENT. CIRCUIT AS INDICATED.
- 5. PROVIDE ONE 20A QUAD RECEPTACLE FOR WATER WALL FEATURE PER DESIGNER'S REQUIREMENTS. CONSULT DESIGNER/INSTALLER PRIOR TO THE START OF ANY WORK AND COORDINATE EXACT LOCATION PRIOR TO ROUGH IN. CIRCUIT AS INDICATED.
- 6. EXISTING UTILITY SERVICE TO BE UPGRADED. ONCE INSPECTED AND VERIFIED, THE EXISTING CT, METER AND BUS DUCT MAY BE REPLACED.
- 7. REPLACED BRANCH PANEL "L1" TO HAVE NEMA 3R ENCLOSURE. REFER TO ONE-LINE DIAGRAM ON SHEET E1.11.

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NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
1245 NE 122ND AVENUE
PORTLAND, OR 97230

DRAWING TITLE:
**ROOF LEVEL
POWER PLAN**
DRAWN BY:
CHECKED BY:

E3.02

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**SECTION 26 0000
BASIC ELECTRICAL MATERIALS AND METHODS**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Do all work in accordance with regulations of serving electrical utility, National Electrical Code, National Electrical Safety Code, National Fire Codes, and other applicable codes.
- B. Whenever the requirements of the Electrical Specifications or Drawings exceed those of the applicable code or standard, the requirements of the Specifications and Drawings shall govern.
- C. This Contractor is bound by the General Conditions, Supplementary Conditions, Special Conditions, and Division 1 bound herewith in addition to this Specification and accompanying Drawings.
- D. Bidders shall view the site and shall include all costs incurred by existing conditions in the bid proposal.

1.2 QUALITY ASSURANCE

- A. All materials shall be new, of manufacturer's latest design and of the best quality. The materials shall be manufactured in accordance with applicable standards of NEMA, ANSI, or UL and shall be UL listed.
- B. Complete each system as shown and place in operation except where only rough-in or partial systems are called for. Each system shall be tested and left in proper operation free of faults, shorts, or unintentional grounds.
- C. Protect electrical work, wire and cable, materials and equipment installed under this Division against damage by other trades, weather conditions, or any other causes. Equipment found damaged or in other than new condition will be rejected as defective.

PART 2 - PRODUCTS

2.1 MATERIALS AND METHODS

- A. Non-metallic plastic conduit (PVC) shall be used for power systems underground feeders, including runs under the building slab. Minimum 3/4" trade size. PVC shall not be used inside buildings.
- B. With the exception of secondary service conduits, all conduits shall be routed overhead.

Basic Electrical Materials and Methods - 1 - Section 26 0000

- C. Galvanized Rigid Conduit (GRC) and/or Intermediate Metal Conduit (IMC) shall be used for all branch circuiting.
- D. GRC and IMC shall be coupled and terminated with threaded fittings. Ends shall be bushed with insulating bushings equal to T&B 1220 or 1230 series.
- E. The Contractor shall provide supplemental ground bus in terminating switch and panelboards, and green ground wire as per code rules, for all PVC runs.
- F. Provide duct-seal at ends of all underground and under slab conduits.
- G. All elbows installed in PVC conduit runs shall be long sweep galvanized rigid steel.
- H. Wire shall be copper, unless otherwise shown on the Drawings. No. 12 minimum size for lighting and power uses. Insulation to be type THHN or THWN except where adverse conditions require other insulation type.
- I. Splices and Terminations: Splices shall utilize wing nut connector installed properly; splices for No. 8 and larger wires shall be made with approved pressure type connectors; all taped joints shall be applied in half-lap layers without stretching to deform.
- J. Outlet boxes shall be galvanized stamped steel with screw ears, knock-out plugs, mounting holes, fixture studs if required.
- K. Safety and disconnect switches shall be NEMA type HD (heavy duty), quick-make, quick-break, dual rated with electrical characteristics as required by system voltage and the load served. Approved manufacturer: Siemens, Square D, Cutler Hammer, G.E..
- L. All wiring devices and plates to be specification grade. Ivory color. Receptacles: Hubbell 5362 series, Switches: Hubbell 1221 series.
- M. Panels shall be factory pre-assembled using copper bussing and bolt-on circuit breakers. Separate feeder lugs shall be provided for each feeder conductor. They shall be so designed that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors, so that circuits may be changed without machine drilling or tapping. Panels shall be "service rated" where required. Approved manufacturer: Siemens, Square D, Cutler Hammer/Westinghouse, G.E.
- N. Branch circuits shall be arranged using double row construction except when narrow column panels are indicated. A nameplate shall be provided listing panel type and ratings.
- O. Circuit breakers shall be fully interchangeable, without disturbing adjacent units, quick-make, quick-break, ambient compensated, and trip indicating. Provide complete, accurate, typewritten resulting circuit schedules in panel.
- P. Provide grounding of the electrical system in accordance with Article 250 of the National Electrical Code. All raceway systems are to contain a grounding conductor sized in accordance with the NEC.

Basic Electrical Materials and Methods - 2 - Section 26 0000

- Q. Provide all lighting outlets indicated on the Drawings with a fixture of the type designated for the location. Outlet symbols on the Drawings without a type designation shall have a fixture the same as those used in similar or like locations. Provide lamps for all fixtures.
- R. LED Light Fixtures:
 - 1. LED lighting fixtures shall be in accordance with IES, NFPA, UL, as shown on the Drawings and as in these Specifications.
 - 2. LED drivers shall include the following features unless otherwise indicated:
 - a. Power factor: > 0.9 nominal
 - b. Input Voltage: 120V – 277V, 60 Hz
 - c. Total Harmonic Distortion: < 20%
 - d. Temperature Rating: 0 deg C – 40 deg C
 - e. Integral short circuit, open circuit, and overload protection.
 - 3. LED modules shall include the following features unless otherwise indicated.
 - a. Comply with IES LM-79 and LM-80 requirements.
 - b. Minimum 80 CRI and color temperature 3500 deg K (interior) and 4000 deg K (exterior) unless otherwise specified in Lighting Fixture Schedule/List.
 - c. Minimum Rated Life: 70,000 hours per IES L70, unless otherwise specified in Lighting Fixture Schedule/List.
 - d. Light output initial lumens as specified in Lighting Fixture Schedule/List.
 - e. LED modules shall be field replaceable and contain quick-disconnects.
 - 4. LED lighting fixtures shall have available digital IES files from a NVLAP accredited testing laboratory in accordance with IESNA LM-79, which specifies the entire luminaire as the source, resulting in an efficiency of 100%. Lighting fixtures that do not have these test results available will not be accepted.
- S. In insulated ceilings, recessed fixtures to be equipped with "IC" rated housing or with a field fabricated fireproof box (metal, sheet rock, etc.), complying fully with all clearance requirements.
- T. LED Emergency Battery Backup: Emergency battery backup for LED fixtures shall be internal to the fixtures (remote if necessary), and shall provide at least 20% of full fixtures lumen output in the emergency mode for a minimum of 90 minutes.

2.2 INSTALLATION REQUIREMENTS

- A. Electrical plans are diagrammatic. Verify exact equipment locations for all equipment. Coordinate with other trades and installations to avoid conflicts.
- B. All work shall be installed in a neat, inconspicuous, professional manner. Conduit runs shall parallel structural lines where exposed.
- C. Support conduits nominally every 6 feet along runs and within 18 inches of terminations, els and fittings. Outlet boxes, fixtures and equipment shall be securely mounted and supported.
- D. The site shall be left clean and free of dirt and debris. Panels, fixtures, outlets and equipment shall be left clean and free of foreign materials and dirt.

Basic Electrical Materials and Methods - 3 - Section 26 0000

**SECTION 26 0923
LIGHTING CONTROL DEVICES**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide lighting control equipment complete and operable as specified herein and as shown on the Drawings.

1.02 QUALITY ASSURANCE

- A. All lighting control equipment shall be UL and CUL listed and labeled and shall comply with the NEC.
- B. Comply with FCC Regulations of Part 15, Subpart J, for Class A.
- C. All equipment in this section to have a minimum 5 year warranty.

1.03 SUBMITTAL AND RECORD DOCUMENTATION

- A. Submit product data for lighting control equipment and systems components, including dimensions and data on features and components. Include elevation views of front panels of control and indicating devices. Include data on ratings.
- B. Submit wiring diagrams detailing specific systems tailored to this Project and differentiating between factory-installed and field-installed wiring.
- C. Submit maintenance data for lighting control equipment and systems components to include in the operation and maintenance manual specified in Division 1.

PART 2 - PRODUCTS

2.01 LINE-VOLTAGE OCCUPANCY SENSORS (AUTOMATIC WALL SWITCH)

- A. Sensor shall be capable of detecting presence in the control area by detecting infrared energy. Small movements shall be detected, such as when a person is writing while seated at a desk.
- B. The sensor shall be a completely self-contained control system that replaces a standard toggle switch. Switching mechanism shall be a latching air gap relay, compatible with electronic ballasts, compact fluorescent, and inductive loads. Triac and other harmonic generating devices shall not be allowed. Sensor shall have ground wire and grounded strap for safety.
- C. Sensor shall utilize advanced control logic based on RISC (Reduced Instruction-Set Circuit) microcontroller.
- D. To avoid false ON activations and to provide immunity to RFI and EMI, a technology shall be used to respond only to those signals caused by human motion.
- E. The sensor shall utilize continuously adjusting Zero Cross Relay control.
- F. Sensors shall utilize "Smart Set" technology to optimize time delay and sensitivity settings to fit occupant usage patterns. The use of Smart Set shall be selectable with a DIP switch.

LIGHTING CONTROL DEVICES 26 0923 - 1

- E. Panels, switches, and all controls shall be clearly and permanently labeled as follows:
 - 1. Panelboards shall be labeled with panel designation, voltage and phase. Labels shall be black on white phenolic plastic with the lettering engraved to expose white lettering. Panel designation shall have 1" high letters and voltage and phase shall be 1/4" high. Nameplates shall be secured with screws. Adhesive is not acceptable.
- F. Lighting fixtures of types and sizes as indicated shall be furnished and installed complete. Provide with all required mounting accessories.
- G. Fixtures shall be left clean at the time of acceptance of the work with. If fixtures are deemed dirty at completion of the project, the Contractor shall clean them.
- H. Fixtures shall be carefully aligned, leveled in straight lines, and located as shown on the drawings.

PART 3 - EXECUTION

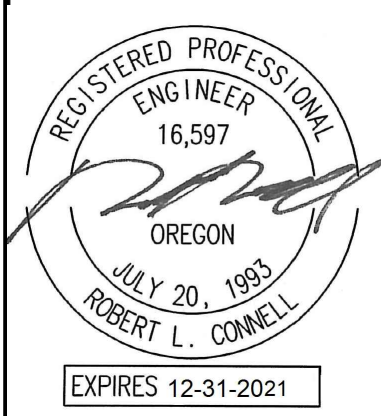
3.1 GUARANTEE

- A. Guarantee the electrical installation against all defects in materials, equipment, and workmanship for one year after the date of acceptance of the work. Defects shall be properly remedied to the satisfaction of the Architect at no cost to the Owner.

END OF SECTION

Basic Electrical Materials and Methods - 4 - Section 26 0000

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JOB NO: 221044.00

NEW ADDITION AND REMODEL FOR
COURTESY LINCOLN
 1245 NE 122ND AVENUE
 PORTLAND, OR 97230

DRAWING TITLE:
DIVISION 26 SPECIFICATIONS
 DRAWN BY:
 CHECKED BY: **RF**

E4.01

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<p>G. Sensor shall have a time delay that is adjusted automatically (with the Smart Set setting) or shall have a fixed time delay of 5, 10, 15, 20 or 30 minutes, walk-through mode, or test mode, set by DIP switch. In walk-through mode, lights shall turn off 3 minutes after the area is initially occupied if no motion is detected after the first 30 seconds.</p> <p>H. Sensor shall have the choice of light flash alert and/or audible alert of impending light shutoff.</p> <p>I. Sensor shall have sensitivity adjustment that is set to either automatic or reduced sensitivity.</p> <p>J. Sensor shall have a built-in light level feature selectable with DIP switch.</p> <p>K. Sensor shall have automatic-ON or manual-ON operation.</p> <p>L. Sensor shall operate at universal voltages.</p> <p>M. Sensor shall be capable of switching 0-800 watts fluorescent/incandescent or 1/6HP @ 120VAC; 0 to 1200 watts fluorescent or 1/6 HP @ 230/277VAC.</p> <p>N. The sensor shall utilize a temperature-compensated dual element sensor and a multi-element Fresnel lens.</p> <p>O. Fresnel lens shall be made of hard, 1.0mm Poly IR 2 material for greater sensitivity and detection performance. Lens shall have grooves facing in to avoid dust and residue build up.</p> <p>P. To assure detection at desktop level uniformly across the space, sensor shall have a two-level, 28-segment multi-element Fresnel lens system.</p> <p>Q. Sensor shall cover up to 300 square feet for walking motion, with a field of view of 180 degrees.</p> <p>R. The sensor shall not protrude more than 3/8" from the wall and should blend in aesthetically.</p> <p>S. Adjustments and mounting hardware shall be concealed under a removable, tamper resistant cover.</p> <p>T. Provide as dual relay model where indicated on drawings.</p> <p>U. Manufacturers: Watt Stopper PW-100/200 series, Lutron, Sensor Switch, or approved equal.</p> <p>2.02 OCCUPANCY SENSORS (CEILING MOUNT, 360 DEG, DUAL TECHNOLOGY)</p> <p>A. The Dual Technology sensor shall be capable of detecting presence in the control area by detecting Doppler shifts in transmitted ultrasound and passive infrared heat changes.</p> <p>B. Sensor shall utilize Dual Sensing Verification Principle for coordination between ultrasonic and PIR technologies. Detection verification of both technologies must occur in order to activate lighting systems. Upon verification, detection by either shall hold lighting on.</p>	<p>LIGHTING CONTROL DEVICES 26 0923 - 2</p>
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<p>A. The ultrasonic occupancy sensors shall be capable of detecting presence in the floor area to be controlled by detecting Doppler shifts in a transmitted ultrasound.</p> <p>B. Ultrasonic sensing shall be volumetric in coverage with a frequency of 40KHz. It shall utilize a technology that automatically adjusts the detection threshold to compensate for changing levels of activity and airflow throughout the controlled space.</p> <p>C. To avoid false ON activations and to provide immunity to RFI and EMI, a technology shall be used to respond only to those signals caused by human motion.</p> <p>D. Sensors of varying frequencies shall not be allowed so as to prevent sensors from interfering with each other and to assure compatibility in the event more sensors are added.</p> <p>E. The UT-300 sensor shall operate at 24 VDC/VAC and half-wave rectified and utilize a power pack.</p> <p>F. UT-355 shall incorporate a switching power supply for reduced power consumption; shall operate at 120/230/277 VAC, and shall not require a power pack. The UT-355 shall be utilized in areas with inaccessible ceiling spaces.</p> <p>G. Detection shall be maintained when a person moves only within or a maximum distance of 12 inches either in a horizontal or vertical manner at the approximate speed of 12 inches per second.</p> <p>H. The UT-300 sensor shall have a manual 'on' function that is facilitated by installing a momentary switch.</p> <p>I. Sensors shall be mounted to the ceiling with a flat, unobtrusive appearance and provide 360 deg of coverage.</p> <p>J. Sensors shall utilize 'Smart Set' technology to optimize time delay and sensitivity settings to fit occupant usage patterns. The use of Smart Set shall be selectable with a DIP switch.</p> <p>K. Sensor shall feature a walk-through mode, where lights turn off 3 minutes after the area is initially occupied if no motion is detected after 30 seconds.</p> <p>L. UT-300 sensor shall have an additional single-pole, double throw isolated relay with normally open, normally closed and common outputs. The isolated relay is for use with HVAC control, data logging, and other control options.</p> <p>M. Sensors shall have a time delay that is adjusted automatically (with the Smart Set setting) or shall have a fixed time delay of 5 to 30 minutes.</p> <p>N. The sensor shall have an LED indicator that remains active at all times in order to verify detection within the area to be controlled. The LED can be disabled.</p> <p>O. Approved Manufacturer: Watt Stopper UT-300 / UT-355, Lutron, Sensor Switch, or approved equal.</p> <p>2.05 POWER AND AUXILIARY RELAY PACKS</p> <p>A. Power pack shall be a self-contained transformer and relay module in a single small package.</p>	<p>LIGHTING CONTROL DEVICES 26 0923 - 5</p>
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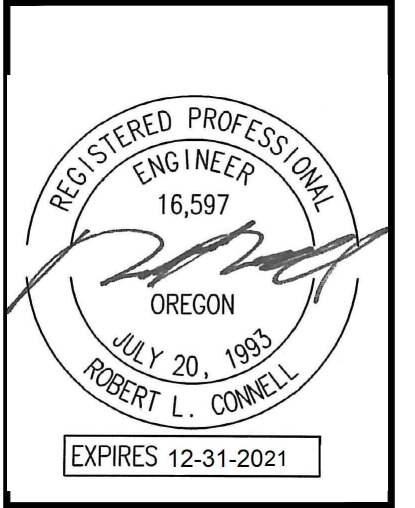
<p>C. Sensor shall have a retrigger feature in which detection by either technology shall retrigger the lighting system on within 5 seconds of being switched off.</p> <p>D. Sensors shall be mounted to the ceiling with a flat, unobtrusive appearance and provide 360deg of coverage.</p> <p>E. Ultrasonic sensing shall be volumetric in coverage with a frequency of 40 KHz. It shall utilize Advanced Signal Processing which automatically adjusts the detection threshold dynamically to compensate for constantly changing levels of activity and air flow throughout controlled space.</p> <p>F. To avoid false ON activations and to provide immunity to RFI and EMI, a technology shall be used to respond only to those signals caused by human motion.</p> <p>G. The PIR technology shall utilize a temperature compensated, dual element sensor and a multi-element Fresnel lens. The lens shall be Poly IR4 material to offer superior performance in the infrared wavelengths and filter short wavelength IR, such as those emitted by the sun and other visible light sources. The lens shall have grooves facing in to avoid dust and residue build up.</p> <p>H. Sensors shall operate at 24 VDC/VAC and halfwave rectified and utilize a power pack.</p> <p>I. Sensors shall utilize 'Smart Set' technology to optimize time delay and sensitivity settings to fit occupant usage patterns. The use of Smart Set shall be selectable with a DIP switch.</p> <p>J. Sensors shall have a time delay that is adjusted automatically or shall have a fixed time delay of 5 to 30 minutes set by DIP switch.</p> <p>K. Sensors shall feature a walk-through mode, where lights turn off 3 minutes after the area is initially occupied if no motion is detected after the first 30 seconds.</p> <p>L. Sensors shall have a built-in light level sensor that works from 10 to 300 footcandles.</p> <p>M. The sensors shall have a manual on function that is facilitated by installing a momentary switch.</p> <p>N. Sensors shall have eight occupancy logic options that give the ability to customize control to meet application needs.</p> <p>O. The sensor shall have an additional single-pole, double-throw isolated relay with normally open, normally closed and common outputs. The isolated relay is for use with HVAC control, data logging, and other control options.</p> <p>P. Each sensing technology shall have an LED indicator that remains active at all times in order to verify detection within the area to be controlled. The LED can be disabled for applications that require less sensor visibility.</p> <p>Q. Manufacturers: Watt Stopper DT-300 series, Lutron, Sensor Switch, or approved equal.</p> <p>2.03 OCCUPANCY SENSORS (CEILING/WALL BRACKET MOUNT, DUAL TECHNOLOGY)</p> <p>A. The Dual Technology sensor shall be capable of detecting presence in the control area by detecting Doppler shifts in transmitted ultrasound and passive infrared heat changes.</p>	<p>LIGHTING CONTROL DEVICES 26 0923 - 3</p>
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<p>B. Power and auxiliary relay packs shall have dry contacts capable of switching 20 amp ballast load, 13 amp incandescent, 1 hp @120 VAC; 20 amp ballast @ 277VAC; 15 amp ballast, 1 hp @ 220-240 VAC.</p> <p>C. Power packs shall provide a 24 VDC, 150mA output/</p> <p>D. Power packs shall be capable of parallel wiring without regard to AC phases on primary.</p> <p>E. Auxiliary relay packs shall contain no transformer power supply and shall switch 120 VAC, 277 VAC or low voltage.</p> <p>F. Power and auxiliary relay packs shall have low voltage Teflon coated leads, rated for 300 volts, suitable for use in plenum applications.</p> <p>G. Power pack shall be UL 2043 rated, use UL94 V-O plenum rated plastic, and have low voltage Teflon leads for use in plenum applications.</p> <p>H. Power packs shall utilize Zero Crossing Circuitry.</p> <p>I. Manufacturers: Watt Stopper, Lutron, Sensor Switch, or approved equal.</p> <p>2.06 EMERGENCY BYPASS RELAY</p> <p>A. Manufacturer: L C & D GR2001 E/S.</p> <p>2.07 DIGITAL OCCUPANCY SENSOR (AUTOMATIC WALL SWITCH, DUAL TECHNOLOGY, DIMMING)</p> <p>A. Manufacturer: nLight nWSX PDT LV DX.</p> <p>2.08 DIGITAL OCCUPANCY SENSOR (CEILING MOUNT, 360 DEG, DUAL TECHNOLOGY)</p> <p>A. Manufacturer: nLight nCM PDT 9.</p> <p>2.09 DIGITAL SWITCH (ON/OFF)</p> <p>A. Manufacturer: nLight nPODM.</p> <p>2.10 DIGITAL SWITCH (ON/OFF SINGLE ZONE DIMMING)</p> <p>A. Manufacturer: nLight nPODM DX.</p> <p>2.11 DIGITAL SWITCH (ON/OFF 4-ZONE DIMMING)</p> <p>A. Manufacturer: nLight nPOD GFX.</p> <p>2.12 DIGITAL DIMMING MODULE (0-10V)</p> <p>A. Manufacturer: nLight nPP16D.</p> <p>2.13 DIGITAL RAISE/LOWER INTERFACE MODULE</p> <p>A. Manufacturer: nLight nIO RLX.</p> <p>2.14 DIGITAL TYPE NL EMERGENCY BYPASS RELAY (NON DIMMING APPLICATION)</p> <p>A. Manufacturer: nLight nPP16ER.</p> <p>2.15 DIGITAL TYPE NLD EMERGENCY BYPASS RELAY (DIMMING APPLICATION)</p>	<p>LIGHTING CONTROL DEVICES 26 0923 - 6</p>
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<p>B. Sensor shall utilize Dual Sensing Verification Principle for coordination between ultrasonic and PIR technologies. Detection verification of both technologies must occur in order to activate lighting systems. Upon verification, detection by either shall hold lighting on.</p> <p>C. Sensor shall have a retrigger feature in which detection by either technology shall retrigger the lighting system on within 5 seconds of being switched off.</p> <p>D. Ultrasonic sensing shall be volumetric in coverage with a frequency of 40 KHz. It shall utilize a technology that automatically adjusts the detection threshold dynamically to compensate for constantly changing levels of activity and air flow throughout controlled space.</p> <p>E. Sensor shall be capable of corner mounting to a wall or ceiling in order to eliminate detection through open doorways and outside of controlled area. Coverage of both technologies must be complete and overlapping throughout the controlled area.</p> <p>F. To avoid false ON activations and to provide immunity to RFI and EMI, a technology shall be used to respond only to those signals caused by human motion.</p> <p>G. Sensor shall operate at 24 VDC/VAC and halfwave rectified and utilize a power pack.</p> <p>H. The PIR technology shall utilize a temperature compensated, dual element sensor and a multi-element Fresnel lens. The lens shall be Poly IR4 material to offer superior performance in the infrared wavelengths and filter short wavelength IR, such as those emitted by the sun and other visible light sources. The lens shall have grooves facing in to avoid dust and residue build up which affects IR reception.</p> <p>I. The lens shall cover up to 2000 square feet for walking motion when mounted at 10 ft and 1000 sq ft of desktop motion.</p> <p>J. DT-200 sensors shall have an additional single-pole, double throw isolated relay with normally open, normally closed and common outputs. The isolated relay is for use with HVAC control, data logging, and other control options.</p> <p>K. Sensors shall utilize 'Smart Set' technology to optimize time delay and sensitivity settings to fit occupant usage patterns. The use of Smart Set shall be selectable with a DIP switch.</p> <p>L. Sensors shall have a time delay that is adjusted automatically (with the Smart Set setting) or shall have a fixed time delay of 5 to 30 minutes.</p> <p>M. Sensors shall feature a walk-through mode, where lights turn off 3 minutes after the area is initially occupied if no motion is detected after the first 30 seconds.</p> <p>N. Sensor shall have an override-ON function for use in the event of a failure.</p> <p>O. Sensor shall have a built-in light level sensor that works from 10 to 300 footcandles.</p> <p>P. Each sensing technology shall have an LED indicator that remains active at all times in order to verify detection within the area to be controlled. The LED can be disabled.</p> <p>Q. Manufacturers: Watt Stopper DT-200 series, Lutron, Sensor Switch, or approved equal.</p> <p>2.04 OCCUPANCY SENSORS (CEILING MOUNT, ULTRASONIC)</p>	<p>LIGHTING CONTROL DEVICES 26 0923 - 4</p>
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<p>A. Manufacturer: nLight nPP16DER.</p> <p>PART 3 - EXECUTION</p> <p>3.01 INSTALLATION</p> <p>A. It shall be the contractor's responsibility to locate and aim sensors in the correct location required for a complete and proper volumetric coverage within the range of coverage of controlled areas per the manufacturer's recommendations. The contractor shall provide the quantity of sensors necessary to properly and completely cover each room indicated to have occupancy sensing.</p> <p>B. The contractor shall provide power packs as required to accomplish the occupancy sensing indicated.</p> <p>C. Mount power packs to junction boxes in accessible locations above wall switches and per the manufacturer's instructions.</p> <p>D. Mount the sensors with adapters and/or swivels per the manufacturer's instructions.</p> <p>E. Connect low voltage/digital cables per manufacturer's installation instructions.</p> <p>F. It is the contractor's responsibility to arrange a pre-installation meeting with the manufacturer's factory authorized representative, at the Owner's facility, to verify placement of sensor and installation criteria.</p> <p>G. The contractor shall provide, at the Owner's facility, the training to familiarize the Owner's personnel with the operation, use, adjustment, and problem-solving diagnosis of the lighting control equipment and systems.</p> <p>3.02 TESTING</p> <p>A. The lighting control equipment and systems shall be thoroughly tested to confirm proper operation.</p> <p style="text-align: center;">END OF SECTION</p>	<p>LIGHTING CONTROL DEVICES 26 0923 - 7</p>
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