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
- AREA LUMINAIRE W/STANDBY LAMP
- AREA LUMINAIRE, WALL MOUNT
- AREA LUMINAIRE, POLE MOUNT
- AREA LUMINAIRE, POST TOP

SWITCH SYMBOLS

- $ SWITCH, SPST +48" A.F.F.
- $_2$ SWITCH, DPST +48" A.F.F.
- $_3$ SWITCH, 3–WAY +48" A.F.F.
- $_4$ SWITCH, 4–WAY +48" A.F.F.
- $_D$ SWITCH, DIMMER +48" A.F.F.
- $_P$ SWITCH, SPST, W/PILOT LIGHT +48" A.F.F.
- $_K$ SWITCH, KEY–OPERATED +48" A.F.F.
- $_T$ SWITCH, TIMED +48" A.F.F.
- PC PHOTOCELL CONTROL
- OS OCCUPANCY SENSOR CONTROL

SIGNAL SYMBOLS

- TELEPHONE OUTLET +18" A.F.F.
- DATA OUTLET +18" A.F.F.
- DATA/TELEPHONE OUTLET +18" A.F.F.
- CLOCK
- SIGNAL BELL
- VISUAL ALARM SIGNAL (COLOR AS INDICATED ON PLAN)
- P.A. SPEAKER
- CATV OUTLET (LOCATE AS SHOWN ON PLANS)

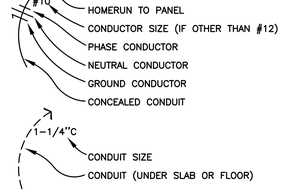
FIRE ALARM SYMBOLS

- F FIRE ALARM MANUAL PULL STATION, +48" A.F.F.
- M MAGNETIC DOOR HOLDER
- S SMOKE DETECTOR, W/AUX. CONTACTS
- D SMOKE/FIRE DAMPER
- SMOKE DETECTOR, DUCT, IONIZATION TYPE W/SAMPLING TUBE
- I SMOKE DETECTOR, IONIZATION TYPE
- P SMOKE DETECTOR, PHOTO TYPE
- H HEAT DETECTOR, RATE–OF–RISE OR FIXED TEMP.
- FIRE MAIN FLOW DETECTION SWITCH
- FIRE MAIN TAMPER DETECTION SWITCH
- FIRE ALARM BELL, +80" A.F.F.
- FIRE ALARM HORN, +80" A.F.F.
- FIRE ALARM HORN/STROBE, +80" A.F.F.
- F OR H FIRE ALARM STROBE, +80" A.F.F.

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
- A OR X RECEPTACLE, SPECIAL (COORDINATE WITH EQUIPMENT SERVED)
- R RELAY
- TIME CLOCK CONTROL
- PUSHBUTTON STATION
- JUNCTION BOX
- THERMOSTAT
- T TRANSFORMER
- DISCONNECT, NON–FUSED
- F 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)

WIRING SYMBOLS

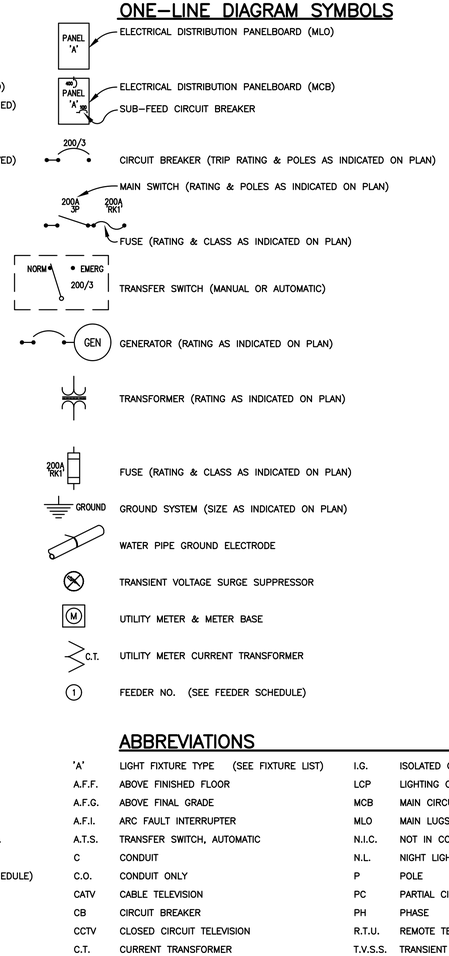


- PANEL & CIRCUIT NUMBER
- HOMERUN TO PANEL
- CONDUCTOR SIZE (IF OTHER THAN #12)
- PHASE CONDUCTOR
- NEUTRAL CONDUCTOR
- GROUND CONDUCTOR
- CONCEALED CONDUIT
- CONDUIT SIZE
- CONDUIT (UNDER SLAB OR FLOOR)
- FLEXIBLE CONNECTION
- CONDUIT, STUBBED & CAPPED

NOTATIONS

- 1 DRAWING NOTE
- 2 / E3 DETAIL REFERENCE: TOP=DETAIL NO., BOTTOM=SHEET NO.
- EF / 2 MECHANICAL EQUIPMENT MARK NO. (SEE EQUIPMENT SCHEDULE)
- A EQUIPMENT NO. (SEE EQUIPMENT SCHEDULE)

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)
- MAIN SWITCH (RATING & POLES AS INDICATED ON PLAN)
- FUSE (RATING & CLASS AS INDICATED ON PLAN)
- TRANSFER SWITCH (MANUAL OR AUTOMATIC)
- GENERATOR (RATING AS INDICATED ON PLAN)
- TRANSFORMER (RATING AS INDICATED ON PLAN)
- FUSE (RATING & CLASS AS INDICATED ON PLAN)
- GROUND GROUND SYSTEM (SIZE AS INDICATED ON PLAN)
- WATER PIPE GROUND ELECTRODE
- TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR
- M UTILITY METER & METER BASE
- C.T. UTILITY METER CURRENT TRANSFORMER
- 1 FEEDER NO. (SEE FEEDER 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
C.O.	CONDUIT ONLY	P	POLE
CATV	CABLE TELEVISION	PC	PARTIAL CIRCUIT
CB	CIRCUIT BREAKER	PH	PHASE
CCTV	CLOSED CIRCUIT TELEVISION	R.T.U.	REMOTE TELEMETRY UNIT
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.

REGISTERED PROFESSIONAL ENGINEER
16,597
OREGON
JULY 20, 1993
ROBERT L. CONNELL
EXPIRES 12-31-2021

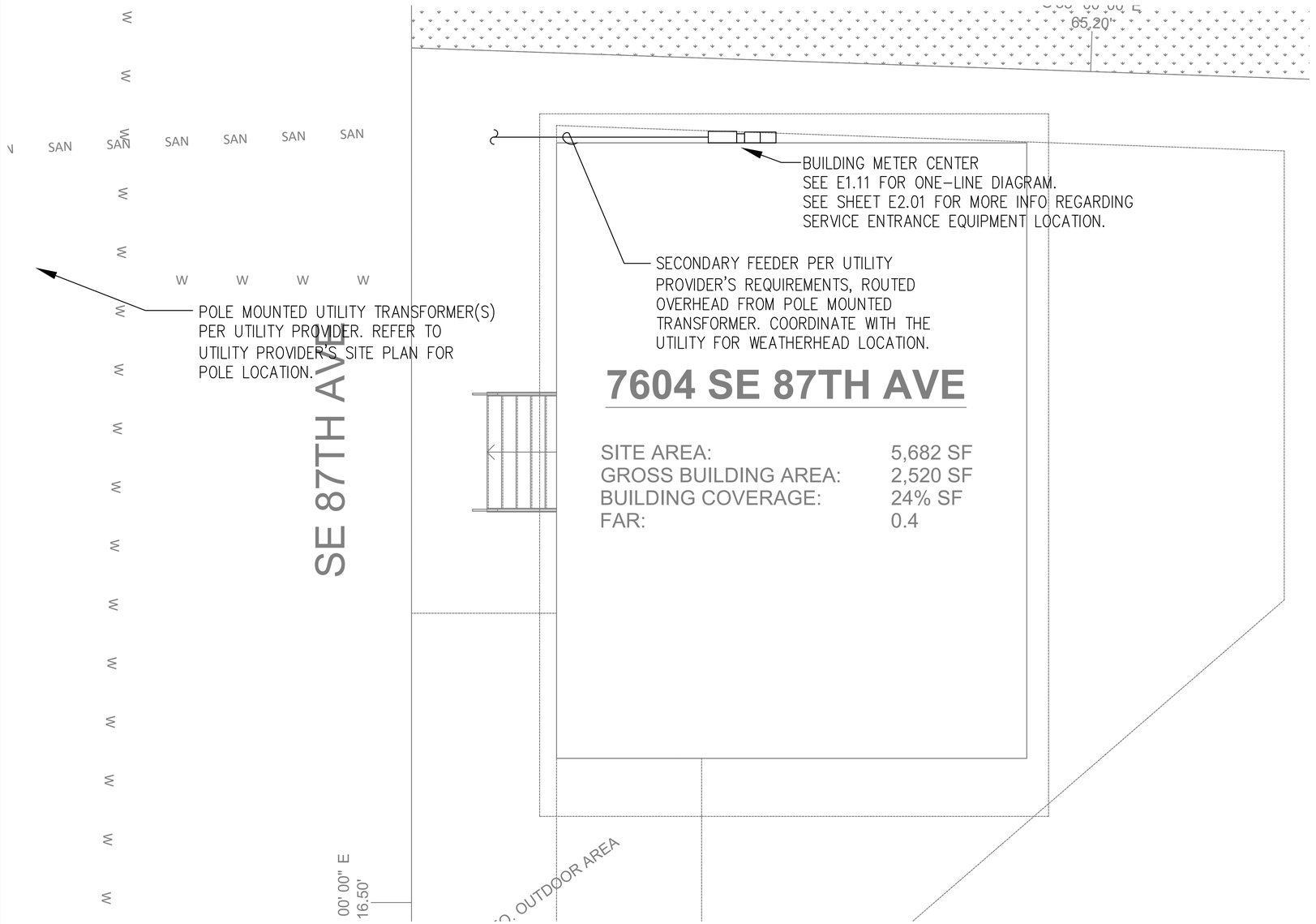
Date: W/D/YY
Proj No: ####
Drawn By: DMT
Chkd By: RLC
DSGN By: DMT
Acad File: 10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR

ELECTRICAL SYMBOL LIST

MFA INC.
Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
FAX: (503) 234-0977
WWW.MFA-ENG.COM

SHEET
E1.00



1 E1.01 ELECTRICAL SITE PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

A. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES.

B. ELECTRICAL PLANS ARE DIAGRAMMATIC AND MAY OR MAY NOT REFLECT ACTUAL FIELD CONDITIONS.

C. REFER TO LIGHTING PLANS FOR BUILDING MOUNTED LIGHT FIXTURE LOCATIONS.

D. COORDINATE WITH LOCAL UTILITY PROVIDER FOR EXACT SERVICE CONDUIT AND CONDUCTORS REQUIREMENTS.

E. CONTRACTOR SHALL REVIEW THE UTILITY PROVIDER'S ELECTRICAL SERVICE REQUIREMENTS PRIOR TO THE START OF ANY WORK.

F. ALL UTILITY WORK SHALL BE DONE IN ACCORDANCE WITH THE UTILITY PROVIDER'S ELECTRICAL SERVICE REQUIREMENTS.

G. REFER TO SHEET E1.11 FOR ONE-LINE DIAGRAM, LOAD SUMMARY INFORMATION AND TYPICAL FEEDER SCHEDULE.

H. CONTRACTOR SHALL REVIEW ALL PROJECT DOCUMENTS AND SPECIFICATIONS IN DETAIL AND REFER TO THE DOCUMENTS THROUGHOUT THE CONSTRUCTION.

I. CONTRACTOR SHALL REPORT ANY CONFLICTS OR DISCREPANCIES TO THE ARCHITECT IMMEDIATELY UPON DISCOVERY FOR RESOLUTION.

J. ALL EQUIPMENT PRODUCTS SUBMITTALS AND SUBSTITUTIONS SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW AND/OR APPROVAL PRIOR TO PURCHASE.

UTILITY REQUIREMENTS

1. SECONDARY UTILITY FEEDER FROM THE POLE MOUNTED TRANSFORMER TO THE BUILDING WEATHERHEAD, SHALL BE PER THE UTILITY PROVIDER.

2. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE UTILITY PROVIDER REGARDING THE SECONDARY SERVICE FEEDERS FROM THE WEATHERHEAD TO THE METER & CT CABINET.

3. CONSULT WITH UTILITY REPRESENTATIVE 2 WEEKS BEFORE STARTING MAIN POWER TRENCHING FOR A PRE-CONSTRUCTION CONFERENCE. INCLUDED IN THIS CONFERENCE WILL BE EXCAVATOR, CPU, TELCO, AND CATV.

REGISTERED PROFESSIONAL ENGINEER
16,597
OREGON
JULY 20, 1993
ROBERT L. CONNELL
EXPIRES 12-31-2021

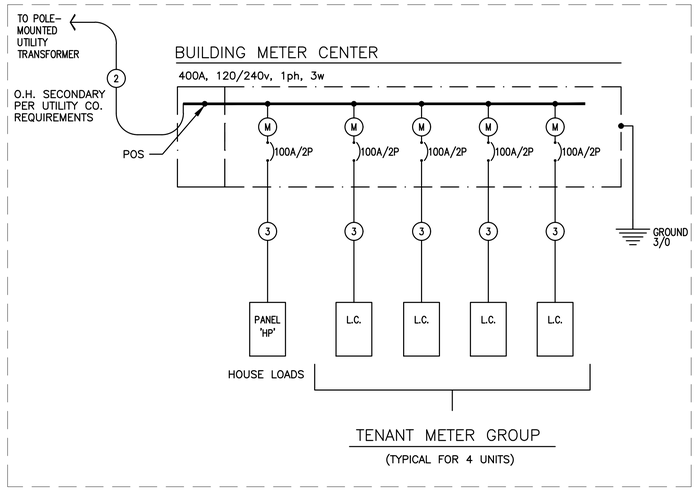
Date:	M/D/YY
Proj No:	####
Drawn By:	DMT
Chkd By:	RLC
DSGN By:	DMT
Acad File:	10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR

ELECTRICAL SITE PLAN

MEA INC.
Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0545
FAX: (503) 234-0577
WWW.MEA-ENG.COM

SHEET
E1.01



1 / E1.11 ELECTRICAL ONE-LINE DIAGRAM

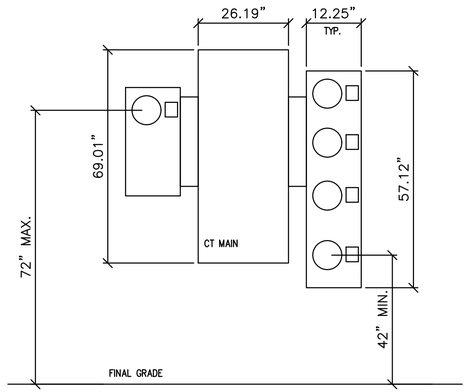
120/240V, 1ø, 3 WIRE

ONE-LINE GENERAL NOTES:

A. 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.

B. COORDINATE METERING REQUIREMENTS WITH UTILITY.

C. FOR LOAD CENTER FEEDER LENGTHS GREATER THAN 145'-0" FROM METER CENTER, INCREASE WIRE SIZE ONE SIZE UP FOR VOLTAGE DROP.



2 / E1.11 TYPICAL METER ELEVATION

NOT TO SCALE

TYPICAL METER ARRANGEMENT PER UTILITY PROVIDER'S REQUIREMENTS. COMPONENTS SHOWN ARE APPROXIMATE BASED ON VENDOR INFORMATION. ACTUAL EQUIPMENT TO BE INSTALLED MAY VARY. ELECTRICAL CONTRACTOR TO PROVIDE CUTSHEETS OF THE PRODUCTS INSTALLED UPON SUBMITTAL REVIEW & APPROVAL.

FEEDER SCHEDULE (COPPER)

NO.	AMPS	CONDUIT	CONDUCTOR
1		**	BY UTILITY CO. & (1) GND
2	400A	3"	ea w/ (3) #500Kcmil & (1) #1/0 GND
3	100A	1 1/2"	(3) #1 & (1) #6 GND

** SIZE AND QUANTITY OF CONDUITS SHALL BE DETERMINED BY THE ELECTRICAL UTILITY PROVIDER, AND PROVIDED & INSTALLED BY THE ELECTRICAL CONTRACTOR WHERE NOT PROVIDED BY THE UTILITY PROVIDER.

Estimated Loads — **SE 87th Ave. Apartments**
8/16/2021 — **Main distribution Center "MDP"**

LOAD:	LIGHTS	RECEPT	HEAT	MISC	EQUIP	MOTORS	LARGEST MOTOR
House Loads (1864sf @ 10w/sf)				18,640			
Residential Meters (Loads x Demand Factor 0.45)				59,000			
SUBTOTAL	0	0	0	77,640	0	0	0
X-FACTOR	1.25	1 + .5	1	1	1	1	0.25
CODE LOAD:	0	0	0	77,640	0	0	0

CONN LOAD:	78	KVA

VOLTS:	240	1ph
TOTAL CALC:	78	KVA
CALC AMPS:	324	AMPS

MFIA PANEL SCHEDULE

panel: HP	mounting: SURFACE (NEMA 3R)	location: BLDG EXTERIOR	connected load amps: 24
voltage: 120/208V (SCCR: 42KAIC)	phase: 3	bus & main: 100A MLO	calculated load amps: 25

C	service	va	a/p	no.	a b c	no.	a/p	va	service	C
1	LIGHTS - BUILDING EXTERIOR	1500	20/1	1	*	2	20/1	600	RECEPT - BASEMENT, EF-2 (x2)	2
1	LIGHTS - BUILDING STAIRWELLS	500	20/1	3	*	4	20/1	900	RECEPT - BLDG STAIRWELLS	2
	SPARE	0	20/1	5	*	6	30/2	2500	EH-1 (BASEMENT)	3
	SPARE	0	20/1	7	*	8	*	2500	*	3
5	PV SOLAR SYSTEM (FUTURE)		60/2	9	*	10	20/1	0	SPARE	
5	*		*	11	*	12	20/1	0	SPARE	
	BLANK			13	*	14			BLANK	
	BLANK			15	*	16			BLANK	
	BLANK			17	*	18			BLANK	
	BLANK			19	*	20			BLANK	
	BLANK			21	*	22			BLANK	
	BLANK			23	*	24			BLANK	
	BLANK			25	*	26			BLANK	
	BLANK			27	*	28			BLANK	
	BLANK			29	*	30			BLANK	
	BLANK			31	*	32			BLANK	
	BLANK			33	*	34			BLANK	
	BLANK			35	*	36			BLANK	
	BLANK			37	*	38			BLANK	
	BLANK			39	*	40			BLANK	
	BLANK			41	*	42			BLANK	

Phase A	4600 VA	NOTES:				line-line voltage	
Phase B	1400 VA					208	
Phase C	2500 VA					largest motor (va)	
Total Connected	8500 VA					0	
load code:	ph. A	ph. B	ph. C		total	factor	calculated load (va)
1. LIGHTS=	1500	500	0	VA	2000	1.25	2500
2. RECEPT.=	600	900	0	VA	1500	1 + 0.5	1500
3. HEATING=	2500	0	2500	VA	5000	1.00	5000
4. KITCHEN=	0	0	0	VA	0	1.00	0
5. EQUIP.=	0	0	0	VA	0	1.00	0
6. MOTORS=	0	0	0	VA	0	*	0
7. MISC=	0	0	0	VA	0	1.00	0
(* 125% of the largest motor + 100% of the balance)						TOTAL =	9000

SE 87TH AVE. APARTMENTS
RESIDENTIAL LOAD SUMMARY

UNIT TYPE:	QTY PER FLOOR Lvl B	Lvl 1	Lvl 2	Lvl 3	TOTAL	AREA (SF)	LTG/RECEPT (3VA / SF)	SM APPL (1500VA X 2)	LAUNDRY (1500VA)	COOKING (CONNECTED)	MICROWAVE (CONNECTED)	DISHWASHER (CONNECTED)	ELECT DRYER (CONNECTED)	WATER HEATER (CONNECTED)	DISPOSAL (CONNECTED)	MOTORS (CONNECTED)	LARGEST OF: AC/HEATING (CONNECTED)
1 Bedroom	0	2	2	0	4	512	1536	3000	1500	11500	1500	0	3800	4500	900	25	4600
TOTALS:	0	2	2	0	4	2048	6144	12000	6000	46000	6000	0	15200	18000	3600	100	18400

VOLTS:	240	1ph
TOTAL CONNECTED:	131	KVA
DEMAND FACTOR:	0.45	Based on Total Number of Residential Units = 3-5 (See N.E.C. Article: 220.84)
TOTAL CALCULATED:	59	KVA
CALCULATED AMPS:	246	AMPS

NOTE:

DWELLING UNIT LOAD CALCULATION

Project: SE 87th Ave. Apartments

Unit Type 1Bedroom

Area: 512 **square feet(average)**

Minimum Size Feeder (NEC 220.40):

General lighting load at 3 VA / SF	1,536	VA
Small Appliance load (2 ckts at 1500VA each)	3,000	VA
Laundry Load (1 ckt at 1500VA)	1,500	VA
Range	11,500	VA
Other Cooking Appliance Load (Microwave Oven)	1,500	VA
Dishwasher Load	0	VA
Electric Dryer Load	3,800	VA
Electric Water Heater Load	4,500	VA
Disposal load	900	VA
Other motor loads	25	VA
Total "General Loads"	28,261	VA
First 10 kVA of "general loads" at 100%	10,000	VA
Remainder of "general loads" at 40%	7,304	VA
Net "general load"	17,304	VA
Largest of: 4,600 VA of electric space heating (less than 4) at 65%	2,990	VA
-or- VA of electric space heating (4 or more) at 40%	0	VA
-or- VA of air conditioning/cooling/heat pumps at 100%	0	VA
TOTAL LOAD	20,294	VA

For 120/240-volt, 3-wire, single-phase service or feeder,
20,294 VA / 208 volts = 85 Amps

Therefore, this dwelling unit shall be permitted to be served by a 100 amp service.

MFIA CIRCUIT DIRECTORY 16-Aug-21

Loadcenter Name: LC-1BR (TYPICAL)	mounting: RECESSED	location			
voltage: 120/240	phase: 1	bus & main: 100A MLO (SCCR: 22K)			

service	a/p	no.	L1 L2	no.	a/p	service
LIGHTS-KITCHEN/LIVING	20/1(A)	1	*	2	20/1(A)	APPLIANCE CIRCUIT
LTS & RECEPT - BATH	20/1	3	*	4	20/1(A)	APPLIANCE CIRCUIT
LTS & RECEPT - BEDROOM	20/1(A)	5	*	6	20/1	REFRIGERATOR
RECEPT - LIVING	20/1(A)	7	*	8	20/1	MICRO/HOOD
SPARE	20/1(A)	9	*	10	50/1	RANGE
SPARE	20/1(A)	11	*	12	*	*
WASHER (OPT)	20/1(G)	13	*	14	20/1	DISHWASHER (OPT)
DRYER (OPT)	40/2	15	*	16	20/1	DISPOSAL (OPT)
*	*	17	*	18	30/2	HEAT
WATER HEATER	30/2	19	*	20	*	*
*	*	21	*	22	20/1	ERV
SMART PANEL (OPT)	20/1	23	*	24	20/1	SPARE
WATER METER (OPT)	----	25	*	26	20/1	SPARE
DRYER BOOSTER (OPT)	----	27	*	28	----	BLANK
BLANK	----	29	*	30	----	BLANK

NOTES:
1. (A) DENOTES: ARC-FAULT INTERRUPTER CIRCUIT BREAKER. INSTALL PER NEC 210.12

2. LOADS FOR THIS PANEL ARE INDICATED ON THE "DWELLING UNIT LOAD CALCULATION".

3. BREAKER & WIRE SHALL BE SIZED FOR EQUIPMENT INSTALLED.

4. (G) DENOTES GFCI RATED BREAKER.

5. BREAKERS NOTED AS (OPT) NOT USED ON PROJECT UNLESS SPECIFIED.

REGISTERED PROFESSIONAL ENGINEER
16,597
OREGON
JULY 20, 1993
ROBERT L. CONNELL
EXPIRES 12-31-2021

Date: M/D/YY
Proj No: ####
Drawn By: DMT
Chkd By: RLC
DSGN By: DMT
Acad File: 10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR

ELECTRICAL SINGLE-LINE DIAGRAM & SCHEDULES

MFIA INC.
Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
FAX: (503) 234-0977
WWW.MFIA-ENG.COM

SHEET
E1.11

LIGHTING FIXTURE LIST

TYPE	LAMP	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	OPTIONS
A1 A1E	LED 3000K 2000LM/80CRI 25W	LITHONIA (OR APROVED OTHER)	ZL1N SERIES	TYPE :4' GEN. PURPOSE STRIP MOUNTING :SURFACE HOUSING :STEEL LENS/REFL :DIFFUSED ACRYLIC VOLTAGE :MVOLT BALLAST :LED DRIVER	TYPE 'AE' SIMILAR TO TYPE 'A' EXCEPT WITH EMERGENCY BATTERY BACK-UP STORAGE & EQUIPMENT ROOMS
B1 B1E	LED 3500K 4200LM 36W	ALCON LIGHTING (OR APROVED OTHER)	12200-4 SERIES	TYPE :4FT LINEAR WALL MOUNT MOUNTING :SURFACE (+7'-6" AFF) HOUSING :STEEL LENS/REFL :ACRYLIC VOLTAGE :MVOLT BALLAST :LED DRIVER	TYPE 'B1E' SIMILAR TO TYPE 'B1' EXCEPT WITH EMERGENCY BATTERY BACK-UP FINISH PER ARCHITECT UL LISTED WET LOCATION STAIRWELLS & LANDINGS
B2	LED 3500K ---LM --W	TBD (OR APROVED OTHER)	TBD	TYPE :EXTERIOR WALL SCONCE MOUNTING :SURFACE (+7'-0" MIN) HOUSING :STEEL LENS/REFL : VOLTAGE :MVOLT BALLAST :LED DRIVER	FINISH PER ARCHITECT UL LISTED WET LOCATION BUILDING EXTERIOR
B3 B3E	LED 3500K 4200LM 36W	ALCON LIGHTING (OR APROVED OTHER)	12100-4 SERIES	TYPE :4FT LINEAR CEILING MOUNT MOUNTING :SURFACE HOUSING :STEEL LENS/REFL :ACRYLIC VOLTAGE :MVOLT BALLAST :LED DRIVER	TYPE 'B3E' SIMILAR TO TYPE 'B3' EXCEPT WITH EMERGENCY BATTERY BACK-UP FINISH PER ARCHITECT UL LISTED WET LOCATION STAIRWELLS & LANDINGS
U1	LED 650 LM 3000K 10W	LIGHTOLIER (OR APPROVED OTHER)	S5R SERIES	TYPE :5" DIA. DOWNLIGHT MOUNTING :SURFACE (J-BOX) HOUSING :ALUMINUM LENS/REFL :ACRYLIC VOLTAGE :MVOLT BALLAST :LED DRIVER (DIMMING)	WHITE FINISH UNIT KITCHEN, HALL, BATHROOM
U2	LED 650LM 3000K (15W)	TBD (OR APPROVED EQUAL)	TBD	TYPE :WALL SCONCE MOUNTING :SURFACE (CENTERED OVER SINK) HOUSING :ALUMINUM LENS/REFL :ACRYLIC VOLTAGE :120V BALLAST :LED DRIVER	FINISH PER ARCHITECT VERIFY MOUNTING HEIGHT W/ ARCHITECT PRIOR TO ROUGH IN. UNIT KITCHEN
U3	LED 1400 LUMEN 3000K 16W	MAXIM LIGHTING (OR APPROVED OTHER)	52102SN SERIES	TYPE :24" VANITY LIGHT MOUNTING :SURFACE (+6" ABOVE MIRROR) HOUSING :STEEL LENS/REFL :GLASS VOLTAGE :120V BALLAST :LED DRIVER	POLISHED CHROME FINISH UNIT BATHROOM
U4	LED 1500 LM 3000K 17W	DESIGN CLASSICS LIGHTIN (OR APROVED OTHER)	0309-SN E16 SERIES	TYPE :11" DIA CEILING LIGHT MOUNTING :SURFACE HOUSING :STEEL LENS/REFL :ACRYLIC VOLTAGE :120V BALLAST :LED DRIVER	FINISH PER ARCHITECT UNIT BEDROOM
U5	LED 650LM 3000K (15W)	TBD (OR APPROVED EQUAL)	TBD	TYPE :EXTERIOR WALL SCONCE MOUNTING :SURFACE (+6'-6" AFF) HOUSING :ALUMINUM LENS/REFL :ACRYLIC VOLTAGE :120V BALLAST :LED DRIVER	FINISH PER ARCHITECT VERIFY MOUNTING HEIGHT W/ ARCHITECT PRIOR TO ROUGH IN. UNIT ENTRY

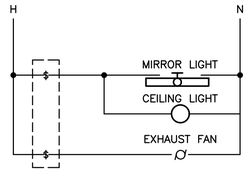
MECHANICAL EQUIPMENT SCHEDULE

NO.	EQUIPMENT NAME	HP/KW	VOLTS	PH	AMPS	CONDUIT	WIRE	GND	CIRCUIT
EF-1	EXHAUST FAN NO.1	11.0W	120	1		1/2"	#12	#12	SEE UNIT PLANS
EF-2	EXHAUST FAN NO.2	11.0W	120	1		1/2"	#12	#12	SEE E2.01
EH-1	ELECTRIC HEATER NO.1	5.0KW	240	1		1/2"	#10	#10	SEE E2.01
ERV-1	VENTILATION UNIT NO.1	25.0W	120	1		1/2"	#12	#12	SEE UNIT PLANS
IHP-1	MINI SPLIT SYST NO.1 (INDOOR)								
OHP-1	MINI SPLIT SYST NO.1 (OUTDOOR)		240	1	17.1 MCA	1/2"	#12	#12	SEE UNIT PLANS
IHP-2	MINI SPLIT SYST NO.2 (INDOOR)								
OHP-2	MINI SPLIT SYST NO.2 (OUTDOOR)		240	1	17.1 MCA	1/2"	#12	#12	SEE UNIT PLANS
IHP-3	MINI SPLIT SYST NO.3 (INDOOR)								
OHP-3	MINI SPLIT SYST NO.3 (OUTDOOR)		240	1	17.1 MCA	1/2"	#12	#12	SEE UNIT PLANS
IHP-4	MINI SPLIT SYST NO.4 (INDOOR)								
OHP-4	MINI SPLIT SYST NO.4 (OUTDOOR)		240	1	17.1 MCA	1/2"	#12	#12	SEE UNIT PLANS
WH-1	WATER HEATER NO.1	4.5KW	240	1		1/2"	#12	#12	SEE UNIT PLANS

GENERAL EQUIPMENT NOTES:

A. CONTRACTOR/DESIGNER SHALL VERIFY ALL MECHANICAL EQUIPMENT CONNECTION LOAD REQUIREMENTS WITH THE MECHANICAL EQUIPMENT PROVIDER PRIOR TO ROUGH IN.

B. MECHANICAL EQUIPMENT SIZES SHOWN IN THE MECHANICAL SCHEDULE ABOVE ARE FOR REFERENCE ONLY AND MAY NOT REFLECT THE ACTUAL EQUIPMENT TO BE INSTALLED.



BATHROOM WITH EXHAUST FAN

1 / E1.12 BATHROOM SWITCHING DIAGRAM – TYPICAL
NO SCALE

GENERAL LIGHTING NOTES:

A. ALL LIGHT FIXTURES SHALL HAVE ENERGY EFFICIENT LAMPING AND BALLASTS.

B. LIGHT FIXTURES FOR LIVING UNITS SHALL BE "ENERGY STAR" RATED.

C. VERIFY ALL FIXTURE TYPES AND FINISHES WITH ARCHITECT PRIOR TO BID.

D. VERIFY ALL FIXTURE MOUNTING HEIGHTS WITH ARCHITECT PRIOR TO BID.

E. VERIFY ALL FIXTURE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH IN.

F. ALL INTERIOR LIGHTING SHALL BE 3000 KELVIN UNLESS OTHERWISE NOTED.

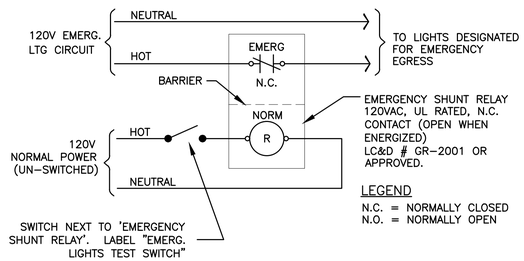
G. ALL PRODUCT SUBSTITUTIONS AND VALUE ENGINEERING SHALL BE SUBMITTED DURING BID PHASE, SHALL MEET DESIGN INTENT AND IS SUBJECT TO OWNER APPROVAL.

H. EGRESS LIGHTING SHALL BE PROVIDED WITH EMERGENCY BATTERY BACKUP, EITHER INTEGRAL OR REMOTE, AS REQUIRED. EGRESS LIGHTING SHALL BE PROVIDED TO MEET MINIMUM LIGHT LEVELS AS DESCRIBED PER OREGON STRUCTURAL SPECIALTY CODE 1006.3.

I. BUILDING EXTERIOR & SITE LIGHTING SHALL BE CONTROLLED VIA PHOTOCELL, EITHER INTEGRAL OR REMOTE, FOR DUSK-TILL-DAWN OPERATION.

J. PARKING LOT AREA LIGHTS SHALL BE PROVIDED WITH MOTION SENSOR (OR OTHER APPROVED MEANS) TO REDUCE LIGHT LEVELS BY A MINIMUM OR 30% DURING PERIODS OF LOW ACTIVITY.

K. BUILDING MOUNTED LIGHT FIXTURES TYPE 'S2' SHALL BE CONTROLLED VIA PHOTOCELL AND SHALL ACT AS EGRESS LIGHTING IN THE EVENT OF POWER FAILURE. THESE FIXTURES ARE TO BE SEPARATE FROM TENANT CONTROLLED "PORCH" LIGHTS.



2 / E1.12 EMERGENCY EGRESS LIGHTING – UNSWITCHED
NO SCALE

REGISTERED PROFESSIONAL ENGINEER
16,597
OREGON
JULY 20, 1993
ROBERT L. CONNELL
EXPIRES 12-31-2021

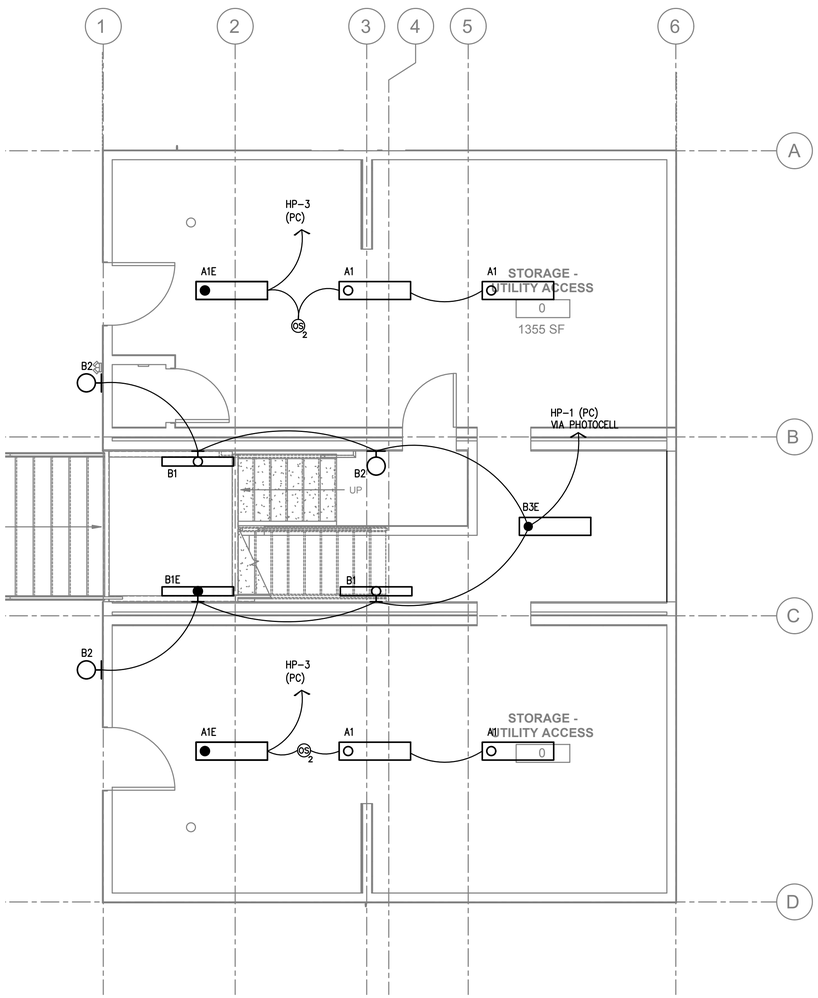
Date: M/D/YY
Proj No: ####
Drawn By: DMT
Chkd By: RLC
DSGN By: DMT
Acad File: 10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR

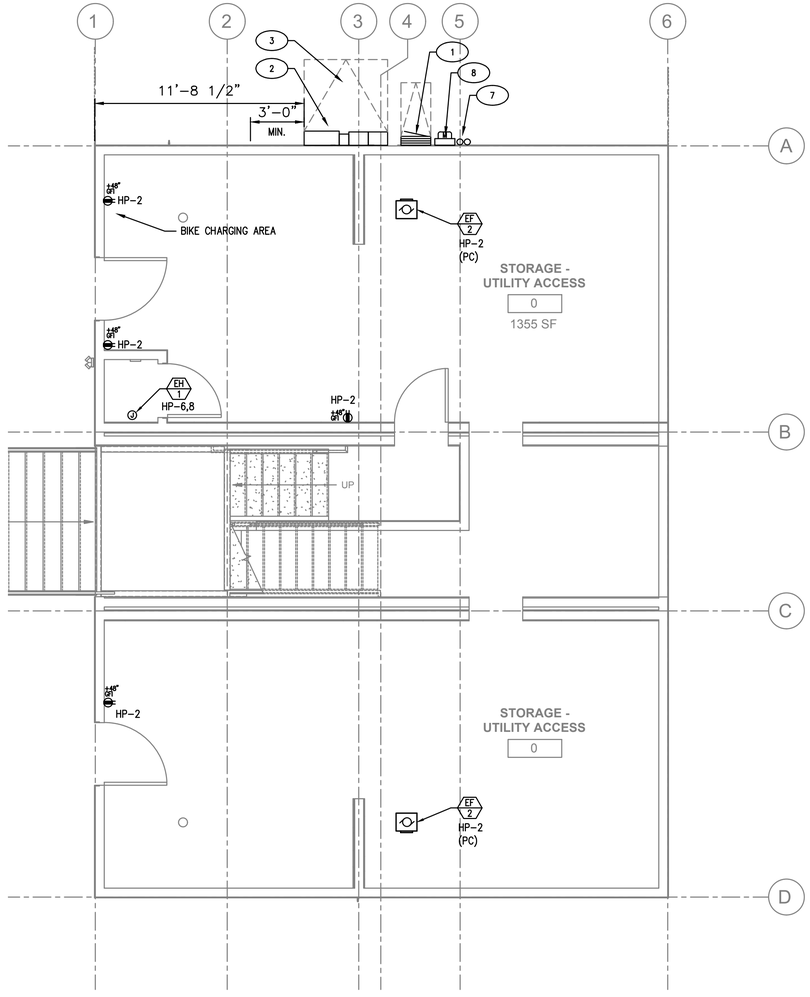
ELECTRICAL SCHEDULED & DETAILS

MFA INC.
Consulting Engineers
3007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0577
WWW.MFA-ENG.COM

SHEET
E1.12



1 E2.00 GRADE LEVEL LIGHTING PLAN
SCALE: 1/4" = 1'-0"



2 E2.00 GRADE LEVEL POWER PLAN
SCALE: 1/4" = 1'-0"

GENERAL 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. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND FINISHES OF DEVICES AND FIXTURES.

D. ELECTRICAL PANELS LOCATED IN PUBLIC OR UNSECURED SPACES SHALL BE PROVIDED WITH A LOCKABLE DOOR PANEL.

E. SERVICE ENTRANCE AND METERING EQUIPMENT SHOWN TO APPROXIMATE SCALE. CONTRACTOR SHALL BE RESPONSIBLE FOR ENDURING THAT INSTALLED EQUIPMENT FITS THE SPACE PROVIDED AND THAT ALL REQUIRED WORKING CLEARANCES ARE PROVIDED.

F. COORDINATE WITH DIVISION 23 FOR EXACT LOCATION AND POWER REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH IN. REFER TO SHEET E1.12 FOR MECHANICAL EQUIPMENT SCHEDULE.

G. ELECTRICAL CONTRACTOR SHALL PROVIDE INSTALLATION AND FINAL CONNECTION OF THERMOSTATS AS REQUIRED. CONSULT MECHANICAL CONTRACTOR FOR EXACT REQUIREMENTS PRIOR TO ROUGH IN. VERIFY THAT THE MECHANICAL CONTRACTOR PROVIDES THE THERMOSTAT THEY SPECIFY IN THEIR PROJECT DOCUMENTS.

H. FIRE ALARM & DETECTION SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE FIRE ALARM SYSTEM DESIGNER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

I. LOW VOLTAGE TELECOM DEVICES SHOWN ARE STRICTLY DIAGRAMMATIC AND SHOWN FOR REFERENCE ONLY. LOW VOLTAGE SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE SERVICE PROVIDER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

J. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE MECHANICAL PLAN SHEETS AND COORDINATE WITH THE MECHANICAL INSTALLER TO AVOID CONFLICTS BETWEEN HVAC EQUIPMENT AND LIGHT FIXTURES WITHIN THE APARTMENT UNITS.

K. REFER TO SHEET E1.21 FOR LIGHT FIXTURE SCHEDULE.

L. **ALL LIGHT SWITCHES SHALL BE ROCKER STYLE, SUCH AS LEVITON DECORA, OR APPROVED EQUAL.**

M. **BUILDING MOUNTED EXTERIOR LIGHTS SHALL BE CIRCUITED FROM THE "HOUSE" BRANCH PANEL, VIA ROOF MOUNTED OR INTEGRAL PHOTOCELL FOR DUSK-TILL-DAWN OPERATION, UNLESS OTHERWISE NOTED.**

N. **THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE CIVIL ENGINEER AND UTILITY PROVIDER TO IDENTIFY ANY CONFLICTS WITH ELECTRICAL EQUIPMENT LOCATED WITHIN THE FLOOD ZONE.**

⬡ KEYED LIGHTING NOTES:

1. **REFER TO E1.21 FOR TYPICAL BATHROOM SWITCHING DIAGRAM.**

⬭ KEYED POWER NOTES:

1. HOUSE ELECTRICAL PANEL. PROVIDE WITH LOCKING DOOR PANEL. PROVIDE WITH LABEL INDICATING BUILDING NUMBER, AMPERAGE RATING, AND VOLTAGE.
2. ELECTRICAL SERVICE ENTRANCE EQUIPMENT AND UTILITY METERS. REFER TO TYPICAL ONE-LINE DIAGRAM ON SHEET E1.11 FOR ADDITIONAL INFORMATION. SERVICE ENTRANCE EQUIPMENT TO BE INSTALLED PER THE UTILITY PROVIDER'S ELECTRICAL SERVICE REQUIREMENTS (ESR), WITH REGARDS TO MINIMUM & MAXIMUM MOUNTING HEIGHTS, AND WORKING CLEARANCES.
3. CODE REQUIRED MINIMUM FLAT, LEVEL WORKING CLEARANCE OF 48" SHALL BE MAINTAINED. PGE REQUIRES METERING EQUIPMENT WITHIN 10'-0" OF THE FACE OF THE BUILDING AND 3'-0" CLEAR OF DOORS.
4. BATHROOM EXHAUST FAN CONTROLLED VIA LIGHT SWITCHES. REFER TO TYPICAL BATHROOM SWITCHING DIAGRAMS ON SHEET E1.21.
5. PROVIDE ONE 15A, 120V DUPLEX RECEPTACLE, MOUNTED UNDER KITCHEN SINK FOR GARBAGE DISPOSAL. CIRCUIT AS INDICATED.
6. FOR RANGE HOODS/MICROWAVES PROVIDED WITH A CORD & PLUG SET, PROVIDE A 20A DUPLEX RECEPTACLE LOCATED INSIDE THE OVERHEAD CABINET. HARDWIRED APPLIANCES MAY BE CIRCUITED VIA J-BOX MOUNTED FLUSH OR RECESSED INTO THE WALL DIRECTLY BEHIND THE APPLIANCE.
7. FUTURE PV SOLAR SYSTEM BY OTHERS. PROVIDE TWO 2" CONDUITS W/ PULL STRINGS, ROUTED TO THE ROOF AND CAP BOTH ENDS. CONDUITS SHALL BE ROUTED SUCH THAT THERE ARE NO ROOF PENETRATIONS.
8. PV METER FOR FUTURE SOLAR SYSTEM BY OTHERS.
9. PV DISCONNECT FOR FUTURE SOLAR SYSTEM BY OTHERS, LOCATED ON ROOF. CONSULT PV SYSTEM INSTALLER FOR EXACT SIZE AND LOCATION PRIOR TO ROUGH IN.
10. PROVIDE WIRE CONNECTION FOR THERMOSTAT(S). COORDINATE WITH MECHANICAL INSTALLER FOR EXACT LOCATION AND POWER REQUIREMENTS PRIOR TO ROUGH IN.
11. COORDINATE WITH THE MECHANICAL EQUIPMENT INSTALLER FOR THE LOCATION AND TYPE OF POWER CONNECTION FOR THE MINI-SPLIT UNITS PRIOR TO ROUGH IN.

REGISTERED PROFESSIONAL ENGINEER
16,597
OREGON
JULY 20, 1995
ROBERT L. CONNELL
EXPIRES 12-31-2021

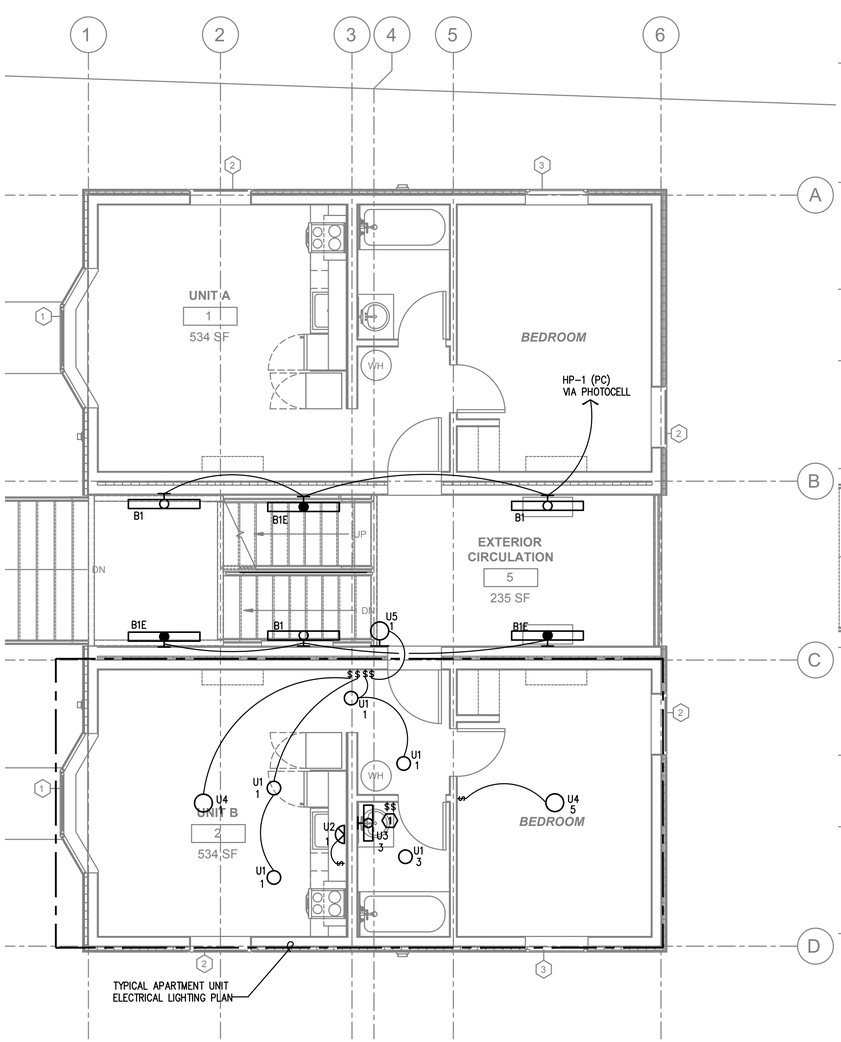
Date:	M/D/YY
Proj No:	####
Drawn By:	DMT
Chkd By:	RLC
DSGN By:	DMT
Acad File:	10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR 97266

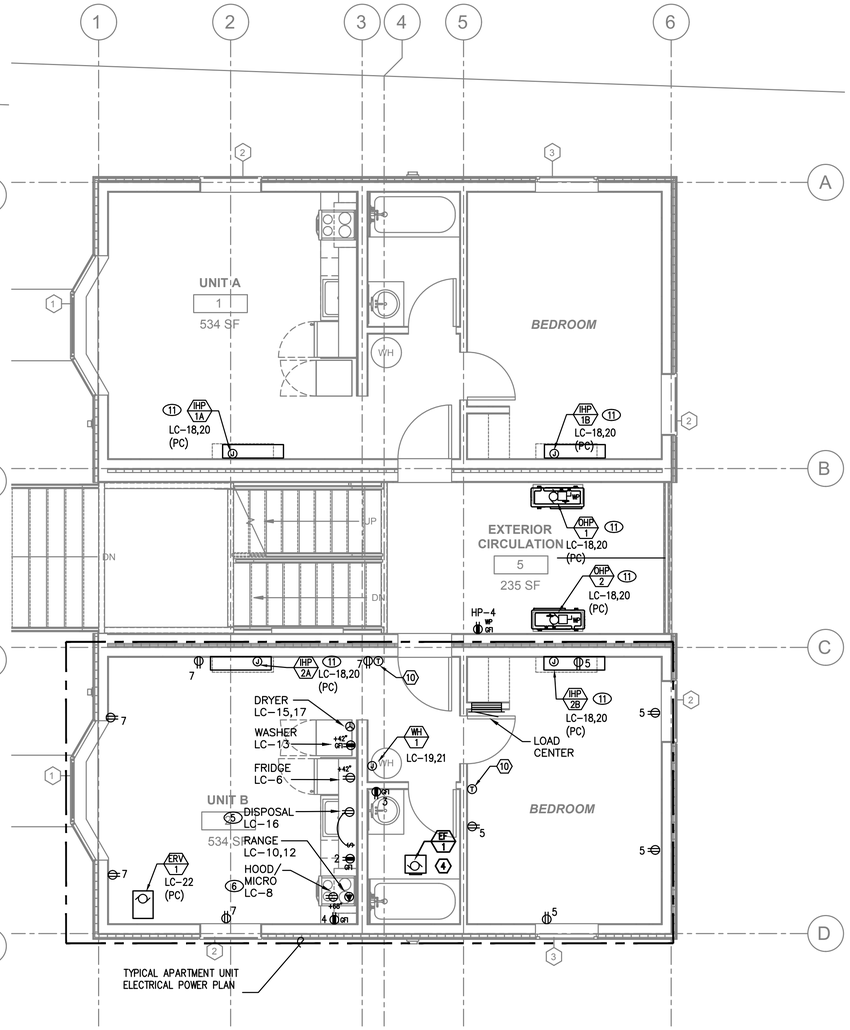
GRADE LEVEL ELECTRICAL PLANS

MFEA INC.
Consulting Engineers
3007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0577
WWW.MFEA-ENG.COM

SHEET
E2.00



1 E2.01 FIRST LEVEL LIGHTING PLAN
SCALE: 1/4" = 1'-0"



2 E2.01 FIRST LEVEL POWER PLAN
SCALE: 1/4" = 1'-0"

GENERAL 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. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND FINISHES OF DEVICES AND FIXTURES.

D. ELECTRICAL PANELS LOCATED IN PUBLIC OR UNSECURED SPACES SHALL BE PROVIDED WITH A LOCKABLE DOOR PANEL.

E. SERVICE ENTRANCE AND METERING EQUIPMENT SHOWN TO APPROXIMATE SCALE. CONTRACTOR SHALL BE RESPONSIBLE FOR ENDURING THAT INSTALLED EQUIPMENT FITS THE SPACE PROVIDED AND THAT ALL REQUIRED WORKING CLEARANCES ARE PROVIDED.

F. COORDINATE WITH DIVISION 23 FOR EXACT LOCATION AND POWER REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH IN. REFER TO SHEET E1.12 FOR MECHANICAL EQUIPMENT SCHEDULE.

G. ELECTRICAL CONTRACTOR SHALL PROVIDE INSTALLATION AND FINAL CONNECTION OF THERMOSTATS AS REQUIRED. CONSULT MECHANICAL CONTRACTOR FOR EXACT REQUIREMENTS PRIOR TO ROUGH IN. VERIFY THAT THE MECHANICAL CONTRACTOR PROVIDES THE THERMOSTAT THEY SPECIFY IN THEIR PROJECT DOCUMENTS.

H. FIRE ALARM & DETECTION SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE FIRE ALARM SYSTEM DESIGNER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

I. LOW VOLTAGE TELECOM DEVICES SHOWN ARE STRICTLY DIAGRAMMATIC AND SHOWN FOR REFERENCE ONLY. LOW VOLTAGE SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE SERVICE PROVIDER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

J. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE MECHANICAL PLAN SHEETS AND COORDINATE WITH THE MECHANICAL INSTALLER TO AVOID CONFLICTS BETWEEN HVAC EQUIPMENT AND LIGHT FIXTURES WITHIN THE APARTMENT UNITS.

K. REFER TO SHEET E1.21 FOR LIGHT FIXTURE SCHEDULE.

L. **ALL LIGHT SWITCHES SHALL BE ROCKER STYLE, SUCH AS LEVITON DECORA, OR APPROVED EQUAL.**

M. **BUILDING MOUNTED EXTERIOR LIGHTS SHALL BE CIRCUITED FROM THE "HOUSE" BRANCH PANEL, VIA ROOF MOUNTED OR INTEGRAL PHOTOCELL FOR DUSK-TILL-DAWN OPERATION, UNLESS OTHERWISE NOTED.**

N. **THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE CIVIL ENGINEER AND UTILITY PROVIDER TO IDENTIFY ANY CONFLICTS WITH ELECTRICAL EQUIPMENT LOCATED WITHIN THE FLOOD ZONE.**

⬡ KEYED LIGHTING NOTES:

1. **REFER TO E1.21 FOR TYPICAL BATHROOM SWITCHING DIAGRAM.**

⬭ KEYED POWER NOTES:

1. HOUSE ELECTRICAL PANEL. PROVIDE WITH LOCKING DOOR PANEL. PROVIDE WITH LABEL INDICATING BUILDING NUMBER, AMPERAGE RATING, AND VOLTAGE.
2. ELECTRICAL SERVICE ENTRANCE EQUIPMENT AND UTILITY METERS. REFER TO TYPICAL ONE-LINE DIAGRAM ON SHEET E1.11 FOR ADDITIONAL INFORMATION. SERVICE ENTRANCE EQUIPMENT TO BE INSTALLED PER THE UTILITY PROVIDER'S ELECTRICAL SERVICE REQUIREMENTS (ESR), WITH REGARDS TO MINIMUM & MAXIMUM MOUNTING HEIGHTS, AND WORKING CLEARANCES.
3. CODE REQUIRED MINIMUM FLAT, LEVEL WORKING CLEARANCE OF 48" SHALL BE MAINTAINED. PGE REQUIRES METERING EQUIPMENT WITHIN 10'-0" OF THE FACE OF THE BUILDING AND 3'-0" CLEAR OF DOORS.
4. BATHROOM EXHAUST FAN CONTROLLED VIA LIGHT SWITCHES. REFER TO TYPICAL BATHROOM SWITCHING DIAGRAMS ON SHEET E1.21.
5. PROVIDE ONE 15A, 120V DUPLEX RECEPTACLE, MOUNTED UNDER KITCHEN SINK FOR GARBAGE DISPOSAL. CIRCUIT AS INDICATED.
6. FOR RANGE HOODS/MICROWAVES PROVIDED WITH A CORD & PLUG SET, PROVIDE A 20A DUPLEX RECEPTACLE LOCATED INSIDE THE OVERHEAD CABINET. HARDWIRED APPLIANCES MAY BE CIRCUITED VIA J-BOX MOUNTED FLUSH OR RECESSED INTO THE WALL DIRECTLY BEHIND THE APPLIANCE.
7. FUTURE PV SOLAR SYSTEM BY OTHERS. PROVIDE TWO 2" CONDUITS W/ PULL STRINGS, ROUTED TO THE ROOF AND CAP BOTH ENDS. CONDUITS SHALL BE ROUTED SUCH THAT THERE ARE NO ROOF PENETRATIONS.
8. PV METER FOR FUTURE SOLAR SYSTEM BY OTHERS.
9. PV DISCONNECT FOR FUTURE SOLAR SYSTEM BY OTHERS, LOCATED ON ROOF. CONSULT PV SYSTEM INSTALLER FOR EXACT SIZE AND LOCATION PRIOR TO ROUGH IN.
10. PROVIDE WIRE CONNECTION FOR THERMOSTAT(S). COORDINATE WITH MECHANICAL INSTALLER FOR EXACT LOCATION AND POWER REQUIREMENTS PRIOR TO ROUGH IN.
11. COORDINATE WITH THE MECHANICAL EQUIPMENT INSTALLER FOR THE LOCATION AND TYPE OF POWER CONNECTION FOR THE MINI-SPLIT UNITS PRIOR TO ROUGH IN.

REGISTERED PROFESSIONAL ENGINEER
16,597
OREGON
JULY 20, 1993
ROBERT L. CONNELL
EXPIRES 12-31-2021

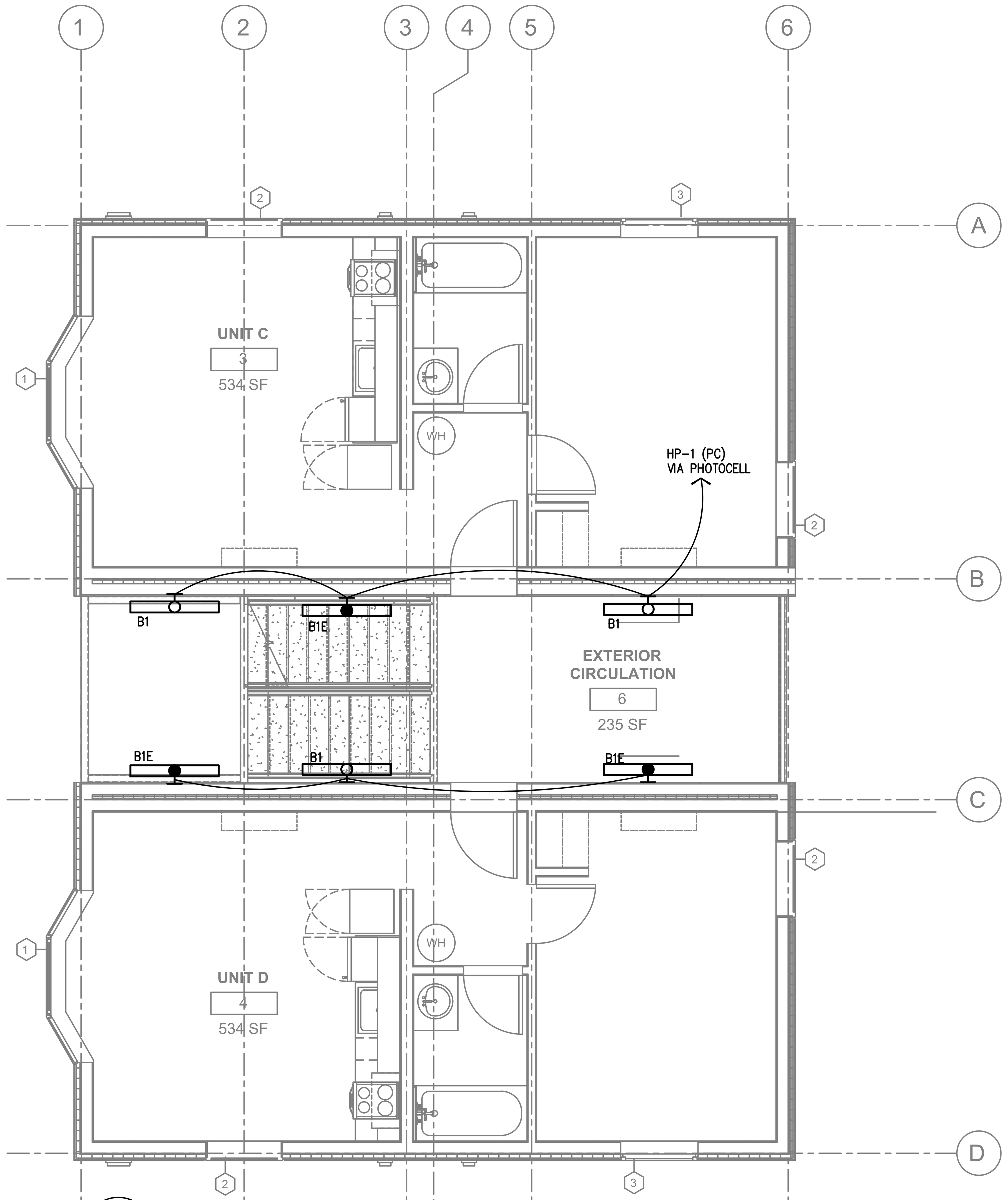
Date:	M/D/YY
Proj No:	####
Drawn By:	DMT
Chkd By:	RLC
DSGN By:	DMT
Acad File:	10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR

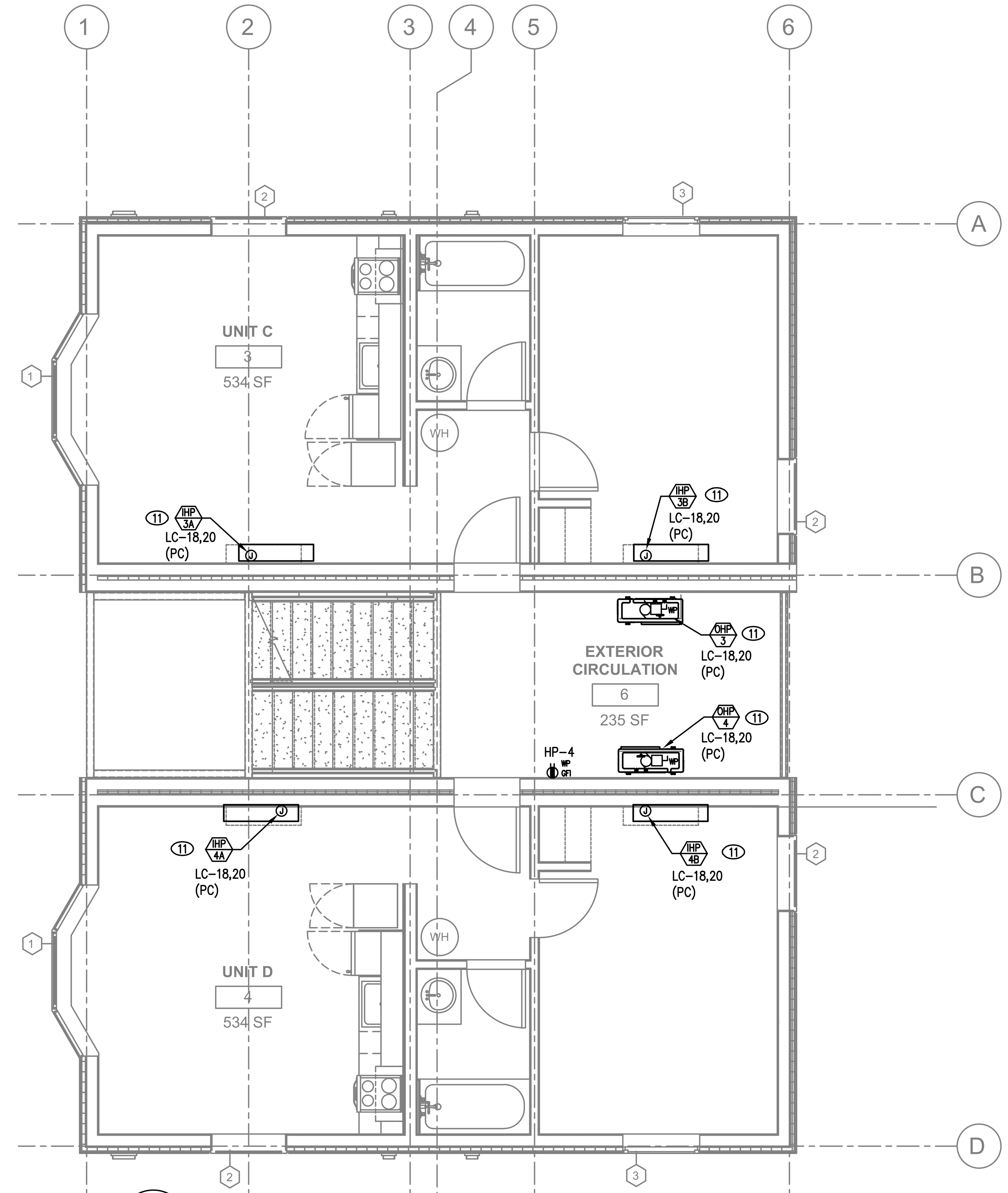
FIRST LEVEL ELECTRICAL PLANS

MFA INC.
Consulting Engineers
3007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0549
FAX: (503) 234-0977
WWW.MFA-ENG.COM

SHEET
E2.01



1 SECOND LEVEL LIGHTING PLAN
E2.002 SCALE: 1/4" = 1'-0"



2 SECOND LEVEL POWER PLAN
E2.02 SCALE: 1/4" = 1'-0"

GENERAL 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. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND FINISHES OF DEVICES AND FIXTURES.

D. ELECTRICAL PANELS LOCATED IN PUBLIC OR UNSECURED SPACES SHALL BE PROVIDED WITH A LOCKABLE DOOR PANEL.

E. SERVICE ENTRANCE AND METERING EQUIPMENT SHOWN TO APPROXIMATE SCALE. CONTRACTOR SHALL BE RESPONSIBLE FOR ENDURING THAT INSTALLED EQUIPMENT FITS THE SPACE PROVIDED AND THAT ALL REQUIRED WORKING CLEARANCES ARE PROVIDED.

F. COORDINATE WITH DIVISION 23 FOR EXACT LOCATION AND POWER REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH IN. REFER TO SHEET E1.12 FOR MECHANICAL EQUIPMENT SCHEDULE.

G. ELECTRICAL CONTRACTOR SHALL PROVIDE INSTALLATION AND FINAL CONNECTION OF THERMOSTATS AS REQUIRED. CONSULT MECHANICAL CONTRACTOR FOR EXACT REQUIREMENTS PRIOR TO ROUGH IN. VERIFY THAT THE MECHANICAL CONTRACTOR PROVIDES THE THERMOSTAT THEY SPECIFY IN THEIR PROJECT DOCUMENTS.

H. FIRE ALARM & DETECTION SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE FIRE ALARM SYSTEM DESIGNER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

I. LOW VOLTAGE TELECOM DEVICES SHOWN ARE STRICTLY DIAGRAMMATIC AND SHOWN FOR REFERENCE ONLY. LOW VOLTAGE SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE SERVICE PROVIDER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

J. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE MECHANICAL PLAN SHEETS AND COORDINATE WITH THE MECHANICAL INSTALLER TO AVOID CONFLICTS BETWEEN HVAC EQUIPMENT AND LIGHT FIXTURES WITHIN THE APARTMENT UNITS.

K. REFER TO SHEET E1.21 FOR LIGHT FIXTURE SCHEDULE.

L. **ALL LIGHT SWITCHES SHALL BE ROCKER STYLE, SUCH AS LEVITON DECORA, OR APPROVED EQUAL.**

M. **BUILDING MOUNTED EXTERIOR LIGHTS SHALL BE CIRCUITED FROM THE "HOUSE" BRANCH PANEL, VIA ROOF MOUNTED OR INTEGRAL PHOTOCELL FOR DUSK-TILL-DAWN OPERATION, UNLESS OTHERWISE NOTED.**

N. **THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE CIVIL ENGINEER AND UTILITY PROVIDER TO IDENTIFY ANY CONFLICTS WITH ELECTRICAL EQUIPMENT LOCATED WITHIN THE FLOOD ZONE.**

KEYED LIGHTING NOTES:

1. **REFER TO E1.21 FOR TYPICAL BATHROOM SWITCHING DIAGRAM.**

KEYED POWER NOTES:

1. HOUSE ELECTRICAL PANEL. PROVIDE WITH LOCKING DOOR PANEL. PROVIDE WITH LABEL INDICATING BUILDING NUMBER, AMPERAGE RATING, AND VOLTAGE.
2. ELECTRICAL SERVICE ENTRANCE EQUIPMENT AND UTILITY METERS. REFER TO TYPICAL ONE-LINE DIAGRAM ON SHEET E1.11 FOR ADDITIONAL INFORMATION. SERVICE ENTRANCE EQUIPMENT TO BE INSTALLED PER THE UTILITY PROVIDER'S ELECTRICAL SERVICE REQUIREMENTS (ESR), WITH REGARDS TO MINIMUM & MAXIMUM MOUNTING HEIGHTS, AND WORKING CLEARANCES.
3. CODE REQUIRED MINIMUM FLAT, LEVEL WORKING CLEARANCE OF 48" SHALL BE MAINTAINED. PGE REQUIRES METERING EQUIPMENT WITHIN 10'-0" OF THE FACE OF THE BUILDING AND 3'-0" CLEAR OF DOORS.
4. BATHROOM EXHAUST FAN CONTROLLED VIA LIGHT SWITCHES. REFER TO TYPICAL BATHROOM SWITCHING DIAGRAMS ON SHEET E1.21.
5. PROVIDE ONE 15A, 120V DUPLEX RECEPTACLE, MOUNTED UNDER KITCHEN SINK FOR GARBAGE DISPOSAL. CIRCUIT AS INDICATED.
6. FOR RANGE HOODS/MICROWAVES PROVIDED WITH A CORD & PLUG SET, PROVIDE A 20A DUPLEX RECEPTACLE LOCATED INSIDE THE OVERHEAD CABINET. HARDWIRED APPLIANCES MAY BE CIRCUITED VIA J-BOX MOUNTED FLUSH OR RECESSED INTO THE WALL DIRECTLY BEHIND THE APPLIANCE.
7. FUTURE PV SOLAR SYSTEM BY OTHERS. PROVIDE TWO 2" CONDUITS W/ PULL STRINGS, ROUTED TO THE ROOF AND CAP BOTH ENDS. CONDUITS SHALL BE ROUTED SUCH THAT THERE ARE NO ROOF PENETRATIONS.
8. PV METER FOR FUTURE SOLAR SYSTEM BY OTHERS.
9. PV DISCONNECT FOR FUTURE SOLAR SYSTEM BY OTHERS, LOCATED ON ROOF. CONSULT PV SYSTEM INSTALLER FOR EXACT SIZE AND LOCATION PRIOR TO ROUGH IN.
10. PROVIDE WIRE CONNECTION FOR THERMOSTAT(S). COORDINATE WITH MECHANICAL INSTALLER FOR EXACT LOCATION AND POWER REQUIREMENTS PRIOR TO ROUGH IN.
11. COORDINATE WITH THE MECHANICAL EQUIPMENT INSTALLER FOR THE LOCATION AND TYPE OF POWER CONNECTION FOR THE MINI-SPLIT UNITS PRIOR TO ROUGH IN.

REGISTERED PROFESSIONAL ENGINEER 16,597 OREGON JULY 20, 1993 ROBERT L. CONNELL
EXPIRES 12-31-2021

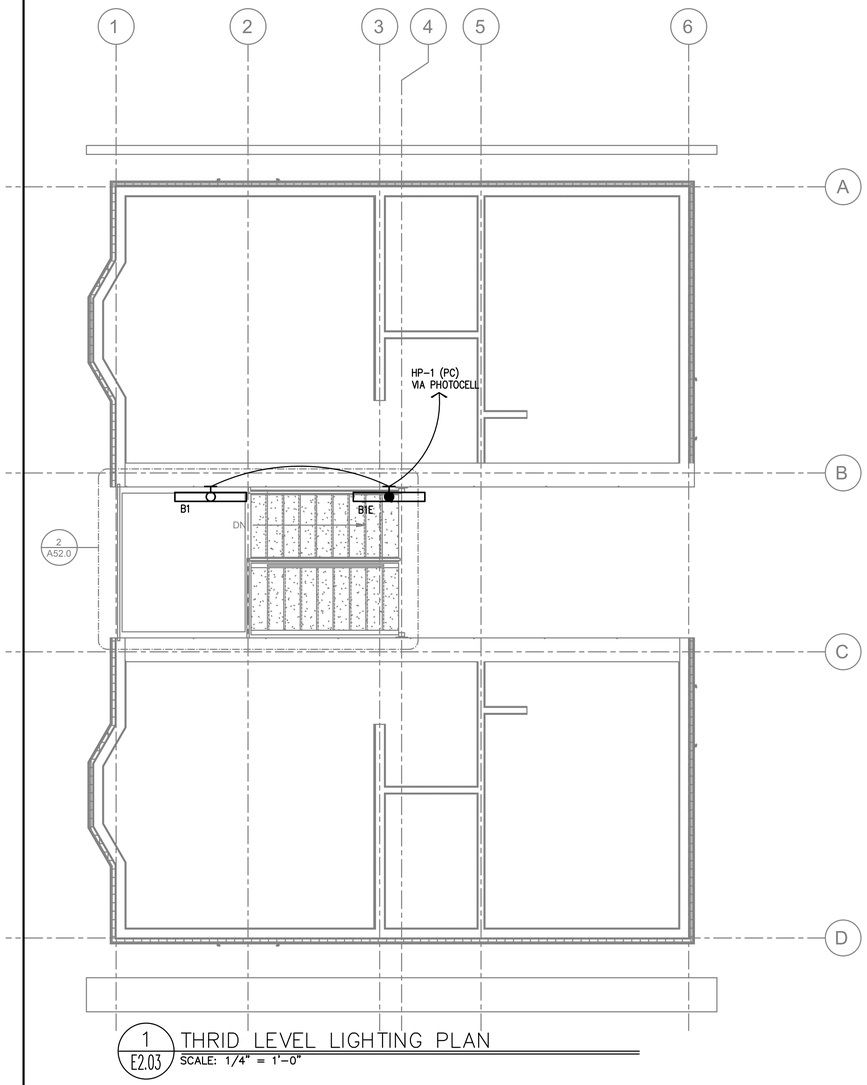
Date: M/D/YY
Proj No: ####
Drawn By: DMT
Chkd By: RLC
DSGN By: DMT
Acad File: 10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR

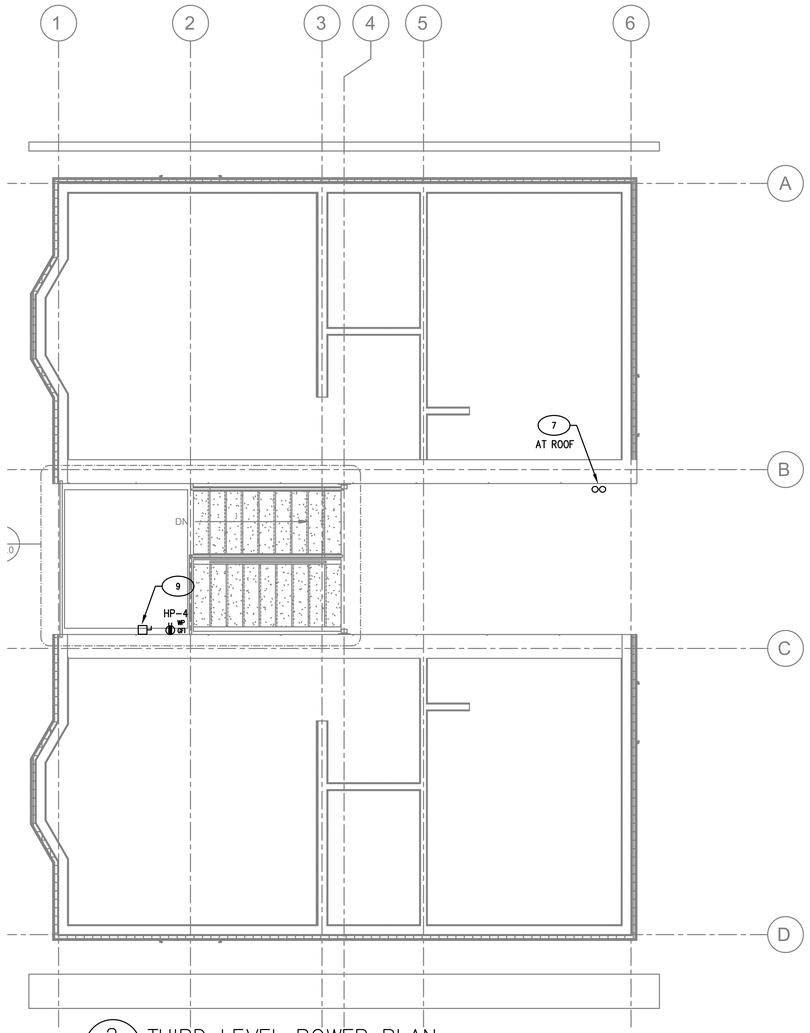
SECOND LEVEL ELECTRICAL PLANS

MFIA INC.
Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
FAX: (503) 234-0577
WWW.MFIA-ENG.COM

SHEET
E2.02



1 E2.03 THRID LEVEL LIGHTING PLAN
SCALE: 1/4" = 1'-0"



2 E2.03 THIRD LEVEL POWER PLAN
SCALE: 1/4" = 1'-0"

GENERAL 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. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL MOUNTING HEIGHTS AND FINISHES OF DEVICES AND FIXTURES.

D. ELECTRICAL PANELS LOCATED IN PUBLIC OR UNSECURED SPACES SHALL BE PROVIDED WITH A LOCKABLE DOOR PANEL.

E. SERVICE ENTRANCE AND METERING EQUIPMENT SHOWN TO APPROXIMATE SCALE. CONTRACTOR SHALL BE RESPONSIBLE FOR ENDURING THAT INSTALLED EQUIPMENT FITS THE SPACE PROVIDED AND THAT ALL REQUIRED WORKING CLEARANCES ARE PROVIDED.

F. COORDINATE WITH DIVISION 23 FOR EXACT LOCATION AND POWER REQUIREMENTS OF ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH IN. REFER TO SHEET E1.12 FOR MECHANICAL EQUIPMENT SCHEDULE.

G. ELECTRICAL CONTRACTOR SHALL PROVIDE INSTALLATION AND FINAL CONNECTION OF THERMOSTATS AS REQUIRED. CONSULT MECHANICAL CONTRACTOR FOR EXACT REQUIREMENTS PRIOR TO ROUGH IN. VERIFY THAT THE MECHANICAL CONTRACTOR PROVIDES THE THERMOSTAT THEY SPECIFY IN THEIR PROJECT DOCUMENTS.

H. FIRE ALARM & DETECTION SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE FIRE ALARM SYSTEM DESIGNER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

I. LOW VOLTAGE TELECOM DEVICES SHOWN ARE STRICTLY DIAGRAMMATIC AND SHOWN FOR REFERENCE ONLY. LOW VOLTAGE SYSTEMS ARE TO BE DESIGNED AND INSTALLED BY OTHERS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE SERVICE PROVIDER FOR EXACT LOCATIONS AND PROVIDE ROUGH IN ONLY.

J. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE MECHANICAL PLAN SHEETS AND COORDINATE WITH THE MECHANICAL INSTALLER TO AVOID CONFLICTS BETWEEN HVAC EQUIPMENT AND LIGHT FIXTURES WITHIN THE APARTMENT UNITS.

K. REFER TO SHEET E1.21 FOR LIGHT FIXTURE SCHEDULE.

L. **ALL LIGHT SWITCHES SHALL BE ROCKER STYLE, SUCH AS LEVITON DECORA, OR APPROVED EQUAL.**

M. **BUILDING MOUNTED EXTERIOR LIGHTS SHALL BE CIRCUITED FROM THE "HOUSE" BRANCH PANEL, VIA ROOF MOUNTED OR INTEGRAL PHOTOCELL FOR DUSK-TILL-DAWN OPERATION, UNLESS OTHERWISE NOTED.**

N. **THE ELECTRICAL CONTRACTOR SHALL CONSULT WITH THE CIVIL ENGINEER AND UTILITY PROVIDER TO IDENTIFY ANY CONFLICTS WITH ELECTRICAL EQUIPMENT LOCATED WITHIN THE FLOOD ZONE.**

⬡ KEYED LIGHTING NOTES:

1. **REFER TO E1.21 FOR TYPICAL BATHROOM SWITCHING DIAGRAM.**

⬭ KEYED POWER NOTES:

1. HOUSE ELECTRICAL PANEL. PROVIDE WITH LOCKING DOOR PANEL. PROVIDE WITH LABEL INDICATING BUILDING NUMBER, AMPERAGE RATING, AND VOLTAGE.
2. ELECTRICAL SERVICE ENTRANCE EQUIPMENT AND UTILITY METERS. REFER TO TYPICAL ONE-LINE DIAGRAM ON SHEET E1.11 FOR ADDITIONAL INFORMATION. SERVICE ENTRANCE EQUIPMENT TO BE INSTALLED PER THE UTILITY PROVIDER'S ELECTRICAL SERVICE REQUIREMENTS (ESR), WITH REGARDS TO MINIMUM & MAXIMUM MOUNTING HEIGHTS, AND WORKING CLEARANCES.
3. CODE REQUIRED MINIMUM FLAT, LEVEL WORKING CLEARANCE OF 48" SHALL BE MAINTAINED. PGE REQUIRES METERING EQUIPMENT WITHIN 10'-0" OF THE FACE OF THE BUILDING AND 3'-0" CLEAR OF DOORS.
4. BATHROOM EXHAUST FAN CONTROLLED VIA LIGHT SWITCHES. REFER TO TYPICAL BATHROOM SWITCHING DIAGRAMS ON SHEET E1.21.
5. PROVIDE ONE 15A, 120V DUPLEX RECEPTACLE, MOUNTED UNDER KITCHEN SINK FOR GARBAGE DISPOSAL. CIRCUIT AS INDICATED.
6. FOR RANGE HOODS/MICROWAVES PROVIDED WITH A CORD & PLUG SET, PROVIDE A 20A DUPLEX RECEPTACLE LOCATED INSIDE THE OVERHEAD CABINET. HARDWIRED APPLIANCES MAY BE CIRCUITED VIA J-BOX MOUNTED FLUSH OR RECESSED INTO THE WALL DIRECTLY BEHIND THE APPLIANCE.
7. FUTURE PV SOLAR SYSTEM BY OTHERS. PROVIDE TWO 2" CONDUITS W/ PULL STRINGS, ROUTED TO THE ROOF AND CAP BOTH ENDS. CONDUITS SHALL BE ROUTED SUCH THAT THERE ARE NO ROOF PENETRATIONS.
8. PV METER FOR FUTURE SOLAR SYSTEM BY OTHERS.
9. PV DISCONNECT FOR FUTURE SOLAR SYSTEM BY OTHERS, LOCATED ON ROOF. CONSULT PV SYSTEM INSTALLER FOR EXACT SIZE AND LOCATION PRIOR TO ROUGH IN.
10. PROVIDE WIRE CONNECTION FOR THERMOSTAT(S). COORDINATE WITH MECHANICAL INSTALLER FOR EXACT LOCATION AND POWER REQUIREMENTS PRIOR TO ROUGH IN.
11. COORDINATE WITH THE MECHANICAL EQUIPMENT INSTALLER FOR THE LOCATION AND TYPE OF POWER CONNECTION FOR THE MINI-SPLIT UNITS PRIOR TO ROUGH IN.

REGISTERED PROFESSIONAL ENGINEER
16,597
OREGON
JULY 20, 1995
ROBERT L. CONNELL
EXPIRES 12-31-2021

Date:	M/D/YY
Proj No:	####
Drawn By:	DMT
Chkd By:	RLC
DSGN By:	DMT
Acad File:	10115

VANDERSLICE 4-PLEX
7604 SE 87th AVE.
PORTLAND, OR

THIRD LEVEL ELECTRICAL PLANS

MFEA INC.
Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0577
WWW.MFEA-ENG.COM

SHEET
E2.03