GENERAL CONSTRUCTION NOTES

1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS. MATERIALS AND EQUIPMENT SHALL BE U.L. LISTED AND LABELED FOR THE APPLICATION.
2. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, LICENSES AND INSPECTION FEES REQUIRED BY THIS CONTRACT WORK.
3. CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO BIDDING AND ALLOW FOR ALL FIELD CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ELECTRICAL WORK NOTED AND CALLED OUT ON ALL CONTRACT DOCUMENTS. THE CONTRACTOR SHALL OBTAIN INFORMATION AND BE FAMILIAR WITH ALL OTHER TRADES WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN OTHER TRADES ON PROJECT.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF PERSONS AND PROPERTY AND SHALL PROVIDE INSURANCE COVERAGE AS NECESSARY FOR LIABILITY AND PERSONAL, PROPERTY DAMAGE, TO FULLY PROTECT THE OWNER, ARCHITECT AND ENGINEER FROM ANY AND ALL CLAIMS RESULTING FROM THIS WORK.
5. CONTRACTOR SHALL MAINTAIN RECORD DRAWINGS AT THE PROJECT SITE INDICATING ALL MODIFICATIONS TO ELECTRICAL SYSTEMS. THE CONTRACTOR SHALL AT THE CONCLUSION OF THE PROJECT PROVIDE ACCURATE "AS-BUILT" DRAWINGS ACCEPTABLE TO THE ARCHITECT.
6. ALL MATERIALS PROVIDED TO THE PROJECT SHALL BE NEW. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL INCIDENTAL INSTALLATION REQUIRED FOR A COMPLETE INSTALLATION.
7. CONTRACTOR SHALL PROVIDE TO THE ARCHITECT A CONSTRUCTION SCHEDULE OF ELECTRICAL WORK. THE CONSTRUCTION SCHEDULE SHALL IDENTIFY ALL SIGNIFICANT MILESTONES WITH COMPLETION DATES.
8. CONTRACTOR SHALL PROVIDE ALL REQUIRED "CUTTING, PATCHING, EXCAVATION, BACKFILL AND REPAIRS" NECESSARY TO RESTORE DAMAGED SURFACES TO EQUAL OR BETTER THAN ORIGINAL CONDITIONS EXISTING AT START OF WORK.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PAINTING ALL EXPOSED CONDUITS AND ELECTRICAL EQUIPMENT. REFER TO ARCHITECTS PAINTING SECTION FOR REQUIREMENTS.
10. ALL ELECTRICAL EQUIPMENT INSTALLED OUTDOORS SHALL BE WEATHERPROOF. EXTERIOR CONDUITS RUN INTO BUILDINGS SHALL BE INSTALLED WITH FLASHING, CAULKED AND SEALED. CONDUITS FOR EXTERIOR ELECTRICAL DEVICES SHALL BE RUN INSIDE BUILDING UNLESS OTHERWISE NOTED ON DRAWINGS.
11. ALL CONDUITS UNLESS OTHERWISE NOTED ON DRAWINGS SHALL HAVE AS A MINIMUM: TWO (2) #12s WITH ONE (1) #12 GROUND, "TICK" MARKS SHOWN ON CIRCUITRY ARE FOR ROUGH ESTIMATING ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WIRES AND WIRE SIZES REQUIRED BY LATEST CODE.
12. ALL 120/277V LIGHT SWITCHES AND WALL OCCUPANT SENSORS SHALL HAVE A NEUTRAL INSTALLED TO THE DEVICE BOX EXCEPT WHERE A CONDUIT OR SURFACE RACEWAY SYSTEM IS INSTALLED.
13. COORDINATE ALL CONDUIT RUNS, ELECTRICAL EQUIPMENT AND PANELS WITH ALL OTHER WORK TO AVOID CONFLICTS.
14. CONTRACTOR SHALL, PRIOR TO BID, FIELD VERIFY ALL REQUIREMENTS FOR MODIFYING THE EXISTING CLOCK, DATA, AND INTERCOM SYSTEMS TO ACCOMMODATE ADDITIONS NOTED, THE CONTRACTOR SHALL PROVIDE ALL MATERIALS NEEDED TO MAKE A FULLY OPERATIONAL SYSTEM AT THE CONCLUSION OF PROJECT WORK.
15. CONTRACTOR SHALL PROVIDE IN EVERY NEW EMPTY CONDUIT A DRAW STRING FOR USE IN FUTURE CONSTRUCTION.
16. ALL CONDUIT SHALL BE CONCEALED WHERE POSSIBLE. CUT AND PATCH EXISTING WALLS WHERE NECESSARY, WHERE IT IS NECESSARY TO CUT OR BORE EXISTING STRUCTURAL WALLS FOR NEW ELECTRICAL WORK OBTAIN PERMISSION FROM THE ARCHITECT PRIOR TO STARTING WORK. REUSE EXISTING CONDUIT WHERE POSSIBLE.
17. WHERE IT IS NOT POSSIBLE TO REUSE EXISTING CONDUIT OR RUN NEW CONCEALED CONDUIT USE NON-METALLIC SURFACE RACEWAY AND BOXES. ROUTING OF ALL NON-METALLIC RACEWAYS SHALL BE APPROVED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.
18. EXTENSION RINGS OR RESET BOXES TO BE FLUSH WITH NEW WALL THICKNESS.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO EXISTING UNDERGROUND SYSTEMS (GAS, WATER, TELEPHONE, ELECTRICAL, SEWER, ETC.). THE CONTRACTOR SHALL REPAIR & PAY ALL EXPENSES FOR DAMAGE TO EXISTING UNDERGROUND SYSTEMS AS A RESULT OF NEW WORK, REPAIR TO DAMAGED UNDERGROUND SYSTEMS SHALL BE TO THE OWNERS SATISFACTION WITHOUT EXTRA EXPENSE TO THE OWNER.
20. EXISTING WIRING SHOWN HAS BEEN TAKEN FROM OLD PLANS AND IS ASSUMED TO BE CORRECT. ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ACTUAL CONDITIONS AND MAKE ADJUSTMENTS TO SUIT ACTUAL CONDITIONS AND TO MEET THE INTENT OF THE CONTRACT DOCUMENTS.

ELECTRICAL SYMBOLS & ABBREVIATIONS

SYMBOLS & ABBREVIATIONS SHOWN ARE FOR GENERAL USE. DISREGARD THOSE WHICH DO NOT APPEAR ON THE PLANS.

- FLUORESCENT OR LED LUMINAIRE - SEE SCHEDULE
- EMERGENCY OR NIGHT LIGHT
- STRIP FLUORESCENT OR LED LUMINAIRE - SEE SCHEDULE
- LUMINAIRE - RECESSED - SEE SCHEDULE
- RECESSED WALL WASHER
- LUMINAIRE - SURFACE MOUNTED - SEE SCHEDULE
- LUMINAIRE - POLE OR POST MOUNTED - SEE SCHEDULE
- LUMINAIRE - WALL MOUNTED SEE SCHEDULE
- BOLLARD OR PATH LIGHT - SEE SCHEDULE
- EXIT LIGHT - DIRECTIONAL ARROWS AS INDICATED - SEE SCHEDULE
- TRACK LIGHTING - SEE SCHEDULE
- EMERGENCY LIGHT
- DIGITAL DUAL TECHNOLOGY OCC. SENSOR
- LIGHTING CONTROL OCCUPANCY SENSOR CORNER MOUNTED
- DRC — DIMMER ROOM CONTROLLER
- PC — PLUG LOAD CONTROLLER
- RC — ROOM LIGHTING CONTROLLER
- LCP — LIGHTING CONTROL PANEL
- DL — DIGITAL DAYLIGHT SENSOR
- $ — SINGLE POLE SWITCH ★★
- $a — SINGLE POLE SWITCH, ★★ a = CIRCUIT CONTROLLED
- $3 — THREE WAY SWITCH★★
- $4 — FOUR WAY SWITCH★★
- $M — MANUAL MOTOR STARTER
- $K — KEY OPERATED SWITCH★★
- LIGHTING DIMMER★★
- DIGITAL ON/OFF SWITCH ★★
- DIGITAL DIMMER SWITCH ★★
- DIGITAL MULTI SCENE LIGHTING SWITCH ★★
- DIGITAL DUAL TECHNOLOGY WALL OCC. SENSOR★★
- WALL OCCUPANCY SENSOR ★★
- DOUBLE SWITCHED WALL OCCUPANCY SENSOR ★★
- DIMMING DUAL TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR ★★
- 2-BUTTON DIMMING DUAL TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR ★★

- SECURITY DOOR CONTACTS
- MD — SECURITY MOTION DETECTOR
- SC — CCTV CAMERA
- KP — SECURITY SYSTEM KEYPAD
- DOOR BELL PUSHBUTTON
- CH — DOOR CHIME WITH LED
- RECEPTACLE - DUPLEX★
- DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER - FIELD VERIFY HEIGHT
- GFCI CONVENIENCE RECEPTACLE - DUPLEX★
- GFCI CONVENIENCE DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER - FIELD VERIFY HEIGHT
- RECEPTACLE DOUBLE DUPLEX★
- HALF SWITCHED DUPLEX RECEPTACLE ★
- SINGLE RECEPTACLE★
- DUPLEX RECEPTACLE - CEILING MOUNTED
- HC — LETTER INDICATES DUPLEX HALF CONTROLLED RECEPTACLE ★
- C — LETTER INDICATES DUPLEX FULLY CONTROLLED RECEPTACLE ★
- FLOOR MOUNTED DUPLEX RECEPTACLE
- FLOOR MOUNTED BOX
- POWER OUTLET - SEE PLANS FOR NEMA TYPE★
- POWER POLE
- WALL TELEPHONE OUTLET★★
- [#] VOICE/DATA WALL OUTLET★
- [#] VOICE/DATA OUTLET MOUNTED ABOVE COUNTER - FIELD VERIFY HEIGHT
- [#] SURFACE MOUNTED VOICE/DATA WALL OUTLET★
- [#] SURFACE MOUNTED VOICE/DATA OUTLET MOUNTED ABOVE COUNTER - FIELD VERIFY HEIGHT
- WIRELESS ACCESS POINT (WAP) - CEILING MOUNTED
- WIRELESS ACCESS POINT (WAP) - WALL MOUNTED - FIELD VERIFY HEIGHT
- [#] VOICE/DATA OUTLET - FLOOR MOUNTED
- TV OUTLET★
- [#] VOICE/DATA OUTLET - CEILING MOUNTED
- S — INTERIOR SPEAKERS CEILING MOUNTED
- S — INTERIOR SPEAKERS WALL MOUNTED
- C — CLOCK +8'-0" AFF U.O.N. VERIFY BEFORE INSTALLATION

- PANELBOARD - FLUSH MOUNTED
- EQUIPMENT PANEL - FLUSH MOUNTED
- PANELBOARD - SURFACE MOUNTED
- EQUIPMENT PANEL - SURFACE MOUNTED
- M — METER W/ CURRENT TRANSFORMER
- J — JUNCTION BOX - CEILING OR WALL MOUNTED, SIZE PER CODE, TAPE AND TAG WIRES
- MOTOR CONNECTION
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH; FUSED WITH DUAL-ELEMENT FUSES SIZED PER EQUIPMENT MFGR'S NAMEPLATE DATA
- COMBINATION STARTER/FUSED DISCONNECT SWITCH; FUSED DISCONNECT SWITCH ELEMENT FUSES SIZED PER EQUIPMENT MFGRS NAMEPLATE DATA
- MAGNETIC STARTER - NEMA SIZE INDICATED NEMA 3R ENCLOSURE UNLESS OTHERWISE SPECIFIED
- CIRCUIT BREAKER
- GROUND ROD WITH GROUNDWELL BOX
- GROUND ELECTRODE
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- TRANSFORMER - SEE SINGLE LINE FOR SIZE
- PULLBOX
- FLEX CONDUIT WITH CONNECTION
- CONDUIT - UP
- CONDUIT - DOWN
- — E — CONDUIT EMERGENCY SYSTEM
- — LV — LOW VOLTAGE WIRING
- SURFACE METAL OR NON-METALLIC RACEWAY
- CONDUIT - CONCEALED IN WALLS OR CEILING
- CONDUIT - EXISTING
- CONDUIT - BELOW SLAB OR UNDERGROUND: 3/4"MIN.
- CAPPED OR STUB-OUT CONDUIT
- CONDUIT CONTINUATION
- #10 — CONDUIT - HOME RUN TO PANEL, TERMINAL CABINET, ETC. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF #12 AWG WIRES WHEN MORE THAN TWO. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE. CROSS HATCHES WITH NUMBER ADJACENT INDICATES WIRE SIZE OTHER THAN #12 AWG.
- 2 — SHEET NOTE REFERENCE SYMBOL: SEE ASSOCIATED NOTE ON SAME SHEET
- 3 — SCHEDULE SYMBOL; SEE ASSOCIATED NOTE ON SAME SHEET

- 2 — DETAIL NOTE REFERENCE SYMBOL SEE ASSOCIATED NOTE ON SAME DETAIL
- F301 — FEEDER DESIGNATION; SEE ASSOCIATED NOTE ON SAME DETAIL
- 1 / E3.0 — DETAIL NUMBER; DETAIL OR SECTION REFERENCE; SHEET NUMBER
- 1 — INDICATES QUANTITY OF TELEPHONE OUTLETS
- 2 — INDICATES QUANTITY OF DATA OUTLETS

ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISHED FLOOR
ALUM/AL	ALUMINUM
ARCH	ARCHITECT
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUIT
CATV	CABLE TV
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TV
CKT	CIRCUIT
CL	CENTER LINE
CLG	CEILING
C.O.	CONDUIT ONLY
CTR	CENTER
D	DIMMER
DIM	DIMENSION
DIST	DISTRIBUTION
(E)	EXISTING
EC	ELECTRICAL CONTRACTOR
(EL)	EVENING LIGHT
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EQUIP	EQUIPMENT
EV	ELECTRICAL VEHICLE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FIN	FINISH
FL	FLOOR
FLA	FULL LOAD AMPS
FLUOR	FLUORESCENT
(F)	FUTURE
GC	GENERAL CONTRACTOR
GFCI GFI	GROUND FAULT INTERRUPTING
GND, G	GROUND
GRS	GALVANIZED RIGID STEEL
HT	HEIGHT
IC	INTERCOM
IDF	INTERMEDIATE DISTRIBUTION FRAME
INCAND	INCANDESCENT
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERES
KW	KILOWATT
LCP	LIGHTING CONTROL PANEL
LTG	LIGHTING
LV	LOW VOLTAGE
KCM	THOUSAND CIRCULAR MILS
M.B.	MAIN CIRCUIT BREAKER
MCA	MINIMUM CIRCUIT AMPS
MDF	MAIN DISTRIBUTION FRAME
MECH	MECHANICAL
MH	METAL HALIDE
MLO	MAIN LUGS ONLY
MPOE	MAIN POINT OF ENTRANCE
MTD	MOUNTED
MTG	MOUNTING
MOCP	MAXIMUM OVER CURRENT PROTECTION
(N)	NEW
NIC	NOT IN CONTRACT
NIEC	NOT IN ELECTRICAL CONTRACT
(NL)	NIGHT LIGHT
NO.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OAH	OVERALL HEIGHT
OC	ON CENTER
OH	OVERHEAD
PA	PUBLIC ADDRESS
PB	PULL BOX
PF	POWER FACTOR
PH	PHASE
PIR	PASSIVE INFRARED
PNL	PANEL
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
PWR	POWER
(R)	EXISTING TO BE REMOVED
(RP)	REMOVABLE POLE
RECPT'S	RECEPTACLES
REQD	REQUIRED
REQMT'S	REQUIREMENT(S)
SHT	SHEET
SLD	SINGLE LINE DIAGRAM
STC	SYSTEMS TERMINATION CABINET
SW	SWITCH
SWBD	SWITCHBOARD
TTB	TELEPHONE TERMINAL BACKBOARD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UG	UNDERGROUND
V	VOLT
VD	VOLTAGE DROP
W	WATT
W/	WITH
WP	WEATHERPROOF
XFMR	TRANSFORMER

FIRE ALARM

NOTE: SEE FIRE ALARM DRAWINGS FOR QUANTITIES AND MOUNTING HEIGHTS.

- P — MANUAL PULL STATION
- STROBE ONLY
- HORN ONLY
- M — MINI HORN
- HORN/STROBE
- CHIME/STROBE
- HEAT DETECTOR
- SMOKE DETECTOR
- CO — CARBON MONOXIDE ALARM
- DUCT SMOKE DETECTOR
- TAMPER SWITCH
- FLOW SWITCH
- POST INDICATING VALVE
- FIRE SMOKE DAMPER
- BELL (GONG)
- FCP — FIRE ALARM CONTROL PANEL
- APS — AUXILIARY POWER SUPPLY
- FSA — FIRE SYSTEM ANNUNCIATOR
- FTR — FIRE ALARM TRANSPONDER OR TRANSMITTER
- ESR — ELEVATOR STATUS/RECALL
- FAC — FIRE ALARM COMMUNICATOR
- ANN — REMOTE ANNUNCIATORS
- EOL — END OF LINE

★ +15" A.F.F. TO BOTTOM OF BOX, U.O.N.
★★ +48" A.F.F. TO TOP OF BOX, U.O.N.
[#] NUMBER IN BRACKETS DENOTES NUMBER OF CABLE DROPS WHEN MORE THAN (2).

LIGHT FIXTURE SCHEDULE

FIXTURE NOTES:

1. ALL LED LIGHT FIXTURE DRIVERS SHALL BE ELECTRONIC TYPE, 10% TOTAL HARMONIC DISTORTION MAXIMUM.
2. ALL LED LIGHT MODULES SHALL BE ENERGY SAVING 3500° K, 80 CRI MINIMUM, U.O.N. (SEE SPECIFICATIONS FOR MORE INFORMATION).
3. ALL LED DRIVERS (AND ASSOC. FIXTS.) SHALL HAVE MANUFACTURER'S CERTIFICATION OF COMPLIANCE WITH CALIFORNIA ENERGY COMMISSION STANDARDS AND REQUIREMENTS, WHERE SUCH ARE USED IN CONDITIONED SPACES.

TYPE	DESCRIPTION	LAMPS	MANUFACTURER
X1	27LW X 14"W POST TOP DUAL HEAD LED FIXTURE, DIE CAST AL HOUSING, WITH MOTION RESPONSE TO 50%, VERIFY FIXTURE AND POLE FINISH WITH OWNER, TYPE IV DISTRIBUTION, NEUTRAL WHITE, 12,000 LUMENS, UNIVERSAL VOLTAGE. MOUNT ON 20' SQUARE STEEL POLE VIA E-EPT SERIES BULLHORN. FIXTURE WEIGHT = 19 lbs.	200W LED	C-LITE C-AR-A-AL 29L SERIES POLE: 20' SERIES

APPLICABLE CODES & STANDARDS

CODES:

1. 2019 CALIFORNIA ADMINISTRATIVE CODE C.C.R., TITLE 24, PART 1.
2. 2019 CALIFORNIA BUILDING CODE (CBC) C.C.R., TITLE 24, VOL. 1 & 2 BASED ON THE 2018 INTERNATIONAL BUILDING CODE (IBC) WITH CALIFORNIA AMENDMENTS.
3. 2019 CALIFORNIA ELECTRICAL CODE (CEC) C.C.R., TITLE 24, PART 3 BASED ON THE 2017 NATIONAL ELECTRICAL CODE (NEC) WITH CALIFORNIA AMENDMENTS.
4. 2019 CALIFORNIA MECHANICAL CODE (CMC) C.C.R., TITLE 24, PART 4 BASED ON THE 2018 UNIFORM MECHANICAL CODE (UMC) WITH CALIFORNIA AMENDMENTS.
5. 2019 CALIFORNIA PLUMBING CODE (CPC) C.C.R., TITLE 24, PART 5 BASED ON THE 2018 UNIFORM PLUMBING CODE (UPC) WITH CALIFORNIA AMENDMENTS.
6. 2019 CALIFORNIA ENERGY CODE C.C.R., TITLE 24, PART 6.
7. 2019 CALIFORNIA FIRE CODE (CFC) C.C.R., TITLE 24, PART 9 BASED ON THE 2018 INTERNATIONAL FIRE CODE (IFC) WITH CALIFORNIA AMENDMENTS.
8. 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE C.C.R., TITLE 24, PART 11.
9. 2019 CALIFORNIA REFERENCED STANDARDS CODE C.C.R., TITLE 24, PART 12.
10. TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.
11. NATIONAL FIRE ALARM CODE (NFPA 72) 2016.
12. CITY OF SAN MARTIN ORDINANCES, CODES, AND REGULATIONS.

STANDARDS:

1. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
2. ELECTRONICS INDUSTRIES ASSOCIATION (EIA)
3. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
4. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
5. NATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)
6. UNDERWRITER LABORATORIES (UL)
7. CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ACT STANDARDS (CAL/OSHA)

SHEET INDEX

SCOPE

PROVIDE ELECTRICAL POLE MOUNTED LIGHTING.

AURUM CONSULTING ENGINEERS MONTEREY BAY, INC
Project No. 22-034.00
404 W. Franklin St. • Suite 100 • Monterey, CA 93940
T.831.646.3330 • F.831.646.3336 • www.acemb.com

REVISIONS	DATE

Project Title: SAN MARTIN RV LIGHTING
13535 SYCAMORE AVE.
SAN MARTIN, CA 95046

Sheet Title: SYMBOLS, ABBREVIATIONS, CODES, STANDARDS, NOTES & SHEET INDEX

PROGRESS DRAWINGS 02/08/22
REGISTERED PROFESSIONAL ENGINEER — ELECTRICAL — STATE OF CALIFORNIA — EXP. 6/30/22

NOT VALID WITHOUT WET SIGNATURE

Drawn by:	CADD
Date:	02.08.22
Scale:	AS NOTED
Job No.:	22-034.00

E0.1

OF . SHEETS

NOTE: THIS SHEET IS 24" x 36" TO THE EDGES. IF THESE DIMENSIONS ARE INCORRECT, IT IS A REDUCED COPY.

PANELBOARD SCHEDULES

(E) PANEL B

Voltage:	120/208V,3ø	Bussing:	100A
Wire:	4W	Feed:	BOTTOM
Type:	NEMA 3R	Mounting:	SURFACE
Mains:	MLO	A.I.C.	10,000

Load	A	B	C	Bkr	Ck	abc	Ck	Bkr	A	B	C	Load
RECEPTS				50/1	1		2	20/1				PROPANE TANK
RECEPTS				15/1				-				SPACE ONLY
SPACE ONLY				-	3		4	-				SPACE ONLY
SPACE ONLY				-				-				SPACE ONLY
SPACE ONLY				-	5		6	-				SPACE ONLY
SPACE ONLY				-				-				SPACE ONLY
SPACE ONLY				-	7		8	-				SPACE ONLY
SPACE ONLY				-				-				SPACE ONLY
PANEL A, B, C, D				125/2	9		10	-				SPACE ONLY
PANEL A, B, C, D								-				SPACE ONLY
PANEL A, B, C, D					11		12	125/2				PANEL E, F, G, H
PANEL A, B, C, D												PANEL E, F, G, H
SPACE ONLY				-	13		14					PANEL E, F, G, H
SPACE ONLY				-								PANEL E, F, G, H
SPACE ONLY				-	15		16	-				SPACE ONLY
SPACE ONLY				-				-				SPACE ONLY
SPACE ONLY				-	17		18	-				SPACE ONLY
SPACE ONLY				-				-				SPACE ONLY
SPACE ONLY				-	19		20	-				SPACE ONLY
SPACE ONLY				-				-				SPACE ONLY
	0	0	0						0	0	0	

KVA Phase A	0.0
KVA Phase B	0.0
KVA Phase C	0.0

Total Connected Load KVA	0.0
Total Load Amperes	0

(E) PANEL A

Voltage:	120/208V,3ø	Bussing:	125A
Wire:	4W	Feed:	BOTTOM
Type:	NEMA 3R	Mounting:	SURFACE
Mains:	MLO	A.I.C.	10,000

Load	A	B	C	Bkr	Ck	abc	Ck	Bkr	A	B	C	Load
LIGHTS POST				20/1	1		2	20/2				PROPANE TANK
LIGHTS POST				20/1								PROPANE TANK
LIGHTS POST 4				20/1	3		4					LIGHTS POST 1
LIGHTS POST 3				20/1								LIGHTS POST 2
LIGHTS POST				30/1	5		6	20/1				LIGHTS POST 1
LIGHTS POST								20/1				LIGHTS POST 2
LIGHTS POST				30/1	7		8	30/1				LIGHTS POST 4
LIGHTS POST												LIGHTS POST 4
LIGHTS POST 3				30/1	9		10	30/1				LIGHTS POST 5
LIGHTS POST 3												LIGHTS POST 5
LIGHTS POST 2				30/1	11		12	30/1				LIGHTS POST 1
LIGHTS POST 2												LIGHTS POST 1
	0	0	0						0	0	0	

KVA Phase A	0.0
KVA Phase B	0.0
KVA Phase C	0.0

Total Connected Load KVA	0.0
Total Load Amperes	0

(N) PANEL C

Voltage:	120/208V,3ø	Bussing:	125A
Wire:	4W	Feed:	BOTTOM
Type:	NEMA 3R	Mounting:	SURFACE
Mains:	MLO	A.I.C.	10,000

Load	A	B	C	Bkr	Ck	abc	Ck	Bkr	A	B	C	Load
LIGHTS - POLE	400			20/1	1		2	20/1	800			LIGHTS - POLE
LIGHTS - POLE		800		20/1	3		4	20/1		800		LIGHTS - POLE
LIGHTS - POLE			800	20/1	5		6	20/1			800	LIGHTS - POLE
LIGHTS - POLE	800			20/1	7		8	20/1	800			LIGHTS - POLE
LIGHTS - POLE		800		20/1	9		10	20/1		800		LIGHTS - POLE
SPACE ONLY				-	11		12	-				SPACE ONLY
SPACE ONLY				-	13		14	-				SPACE ONLY
SPACE ONLY				-	15		16	-				SPACE ONLY
SPACE ONLY				-	17		18	-				SPACE ONLY
SPACE ONLY				-	19		20	-				SPACE ONLY
SPACE ONLY				-	21		22	-				SPACE ONLY
SPACE ONLY				-	23		24	-				SPACE ONLY
SPACE ONLY				-	25		26	-				SPACE ONLY
SPACE ONLY				-	27		28	-				SPACE ONLY
SPACE ONLY				-	29		30	-				SPACE ONLY
	1200	1600	800						1600	1600	800	

KVA Phase A	2.8
KVA Phase B	3.2
KVA Phase C	1.6

Total Connected Load KVA	7.6
Total Load Amperes	21

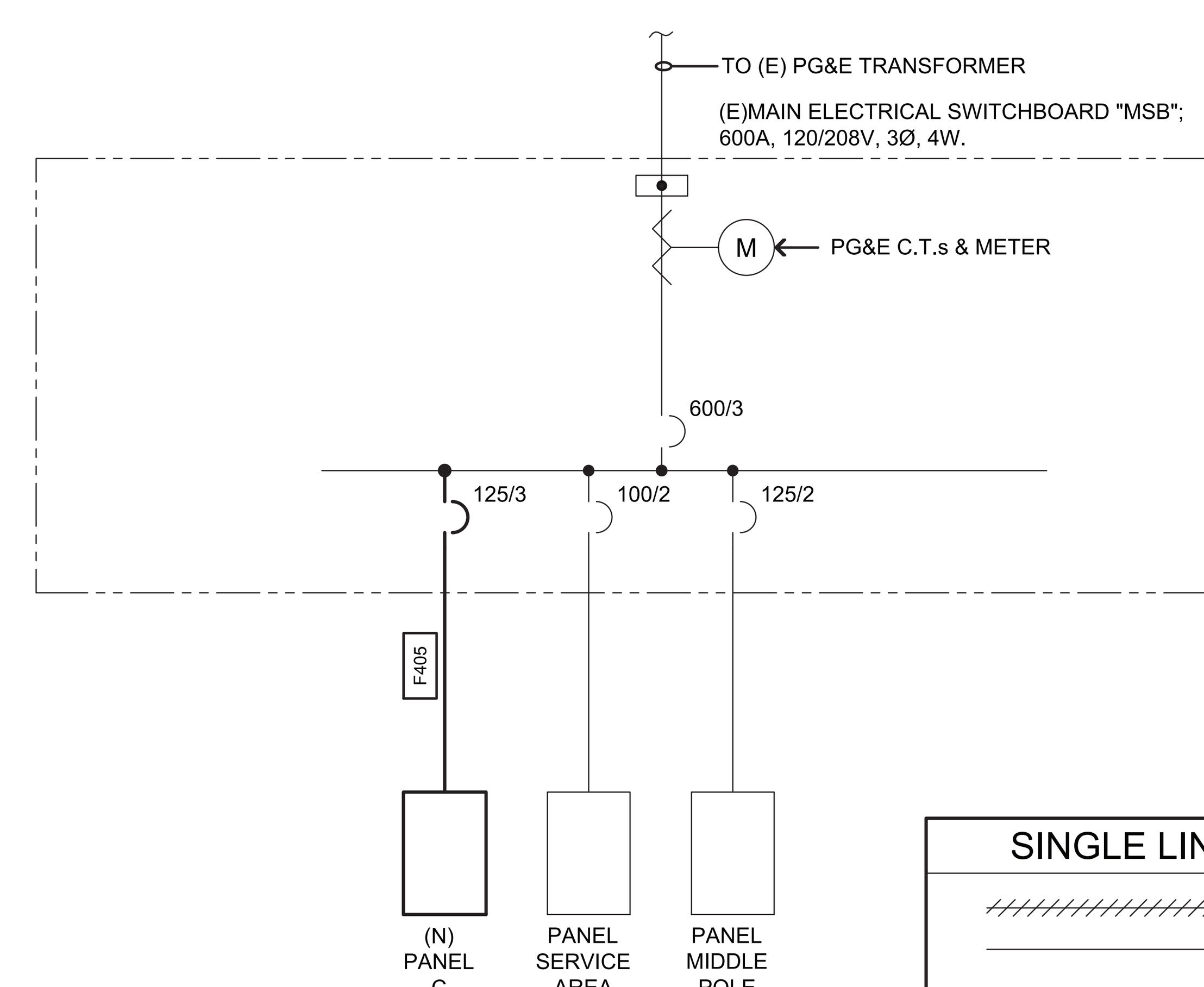
(E) PANEL MSB

Voltage:	120/208V,3ø	Bussing:	600A
Wire:	4W	Feed:	BOTTOM
Type:	NEMA 1	Mounting:	SURFACE
Mains:	600A M.B.	A.I.C.	10,000

Load	A	B	C	Bkr	Ck	abc	Ck	Bkr	A	B	C	Load
RECEPTS 30A				30/2	1		2	50/3				AC
RECEPTS 30A					3		4					AC
SPACE ONLY				-	5		6					AC
SPACE ONLY				-	7		8	-				SPACE ONLY
RECEPTS 30A				30/1	9		10	-				SPACE ONLY
RECEPTS 30A				30/1	11		12	100/2				PANEL SERVICE AREA
RECEPTS FENCE				20/1	13		14					PANEL SERVICE AREA
WATER PURIFIER				15/1	15		16	**125/3**		**2800**		**(N) PANEL C**
RV OUTLET				30/1	17		18				**3200**	**(N) PANEL C**
SPARE				20/1	19		20		**1600**			**(N) PANEL C**
RECEPT 50A				50/2	21		22	125/2				MIDDLE POLE SUBPANEL
RECEPT 50A					23		24					MIDDLE POLE SUBPANEL
SPACE ONLY				15/3	25		26	20/1				EXIT SIGNS
SPACE ONLY					27		28	20/1				LIGHTS PLUGS
SPACE ONLY					29		30	20/1				SPARE
RECEPTS				20/1	31		32	40/3				PUMP
RECEPTS				20/1	33		34					PUMP
TANK				50/3	35		36					PUMP
TANK					37		38	-				SPACE ONLY
TANK					39		40	30/1				MICRO
PRINTER				20/1	41		42	20/1				CUBICLES
	0	0	0						1600	2800	3200	

KVA Phase A	1.6
KVA Phase B	2.8
KVA Phase C	3.2

Total Connected Load KVA	7.6
Total Load Amperes	21



SINGLE LINE DIAGRAM LEGEND

- (DEMOLISH)
- (EXISTING)
- (NEW)
- (E) FLOOR/PAD MOUNTED EQUIPMENT
- (N) FLOOR/PAD MOUNTED EQUIPMENT

1 EXISTING SINGLE LINE DIAGRAM

NO SCALE

(E) FEEDER SCHEDULE

DESIGNATION	AMPACITY	CONDUIT & CONDUCTORS SIZES
F301	40	3/4" C., 3 #8 & 1 #10 GND.
F302	50/60	1" C., 3 #6 & 1 #10 GND.
F303	70	1 1/4" C., 3 #4 & 1 #8 GND.
F304	100	1 1/4" C., 3 #2 & 1 #8 GND.
F305	125	1 1/2" C., 3 #1 & 1 #6 GND.
F306	150	1 1/2" C., 3 #1/0 & 1 #6 GND.
F307	175	2" C., 3 #2/0 & 1 #6 GND.
F308	200	2" C., 3 #3/0 & 1 #6 GND.
F309	225	2" C., 3 #4/0 & 1 #4 GND.
F310	250	3" C., 3 #250kcm & 1 #4 GND.
F311	300	3" C., 3 #350kcm & 1 #4 GND.
F312	400	3 1/2" C., 3 #500kcm & 1 #2 GND.
F313	600	(2) 3" C., EACH W/3 #350kcm & 1 #1/0 GND (PARALLEL).
F314	800	(2) 3 1/2" C., EACH W/3 #500kcm & 1 #1/0 GND (PARALLEL).
F315	1000	(3) 3 1/2" C., EACH W/3 #350kcm & 1 #2/0 GND (PARALLEL).
F316	1200	(4) 3" C., EACH W/3 #350kcm & 1 #3/0 GND (PARALLEL).
F401	40	3/4" C., 4 #8 & 1 #10 GND.
F402	50/60	1" C., 4 #6 & 1 #10 GND.
F403	70	1 1/4" C., 4 #4 & 1 #8 GND.
F404	100	1 1/2" C., 4 #2 & 1 #8 GND.
F405	125	2" C., 4 #1 & 1 #6 GND.
F406	150	2" C., 4 #1/0 & 1 #6 GND.
F407	175	2" C., 4 #2/0 & 1 #6 GND.
F408	200	2 1/2" C., 4 #3/0 & 1 #6 GND.
F409	225	2 1/2" C., 4 #4/0 & 1 #4 GND.
F410	250	3" C., 4 #250kcm & 1 #4 GND.
F411	300	3 1/2" C., 4 #350kcm & 1 #4 GND.
F412	400	4" C., 4 #500kcm & 1 #2 GND.
F412T	400	4" C., 4 #600kcm & 1 #2 GND.
F413	600	(2) 3 1/2" C., EACH W/4 #350kcm & 1 #1/0 GND (PARALLEL).
F414	800	(2) 4" C., EACH W/4 #500kcm & 1 #1/0 GND (PARALLEL).
F414T	800	(2) 4" C., EACH W/4 #600kcm & 1 #1/0 GND (PARALLEL).
F415	1000	(3) 4" C., EACH W/4 #350kcm & 1 #2/0 GND (PARALLEL).
F416	1200	(4) 3 1/2" C., EACH W/4 #350kcm & 1 #3/0 GND (PARALLEL).

AURUM CONSULTING ENGINEERS
MONTEREY BAY, INC
Project No. 22-034.00
404 W. Franklin St. • Suite 100 • Monterey, CA 93940
T.831.646.3330 • F.831.646.3336 • www.acemb.com

REVISIONS	DATE

Project Title:

SAN MARTIN RV LIGHTING

13635 SYCAMORE AVE.
SAN MARTIN, CA 95046

Sheet Title:

ELECTRICAL SINGLE LINE DIAGRAM & PANELBOARD SCHEDULES

REGISTERED PROFESSIONAL ENGINEER · No. E17789 · EXP. 6/30/22 · ELECTRICAL · STATE OF CALIFORNIA

PROGRESS DRAWINGS 02/08/22

NOT VALID WITHOUT WET SIGNATURE

Drawn by:	CADD
Date:	02.08.22
Scale:	AS NOTED
Job No.:	22-034.00

E1.1

OF . SHEETS

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NO SCALE

NORTH

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REVISIONS	DATE

Project Title:

SAN MARTIN RV LIGHTING

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Sheet Title:

ELECTRICAL SITE PLAN

PROGRESS DRAWINGS 02/08/22

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Drawn by:	CADD
Date:	02.08.22
Scale:	AS NOTED
Job No.:	22-034.00

E2.1

OF . SHEETS

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30' 0' 15' 30'
APPROX. SCALE: 1"=30'-0"

NORTH

AURUM CONSULTING ENGINEERS
MONTEREY BAY, INC

Project No. 22-034.00

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REVISIONS	DATE

Project Title:

SAN MARTIN RV LIGHTING

13635 SYCAMORE AVE.
SAN MARTIN, CA 95046

Sheet Title:

PARTIAL ELECTRICAL SITE PLAN

PROGRESS DRAWINGS 02/08/22

REGISTERED PROFESSIONAL ENGINEER No. E 17759 EXP. 6/30/22 ELECTRICAL STATE OF CALIFORNIA

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Written dimensions on these drawings shall have precedence over scaled dimensions. Contractors shall verify and be responsible for all dimensions and conditions on the job and this office shall be notified of any variations from the dimensions and conditions shown by these drawings. Shop details shall be submitted to this office for approval before proceeding with fabrication.

Drawn by:	CADD
Date:	02.08.22
Scale:	AS NOTED
Job No.:	22-034.00

E2.2

OF . SHEETS

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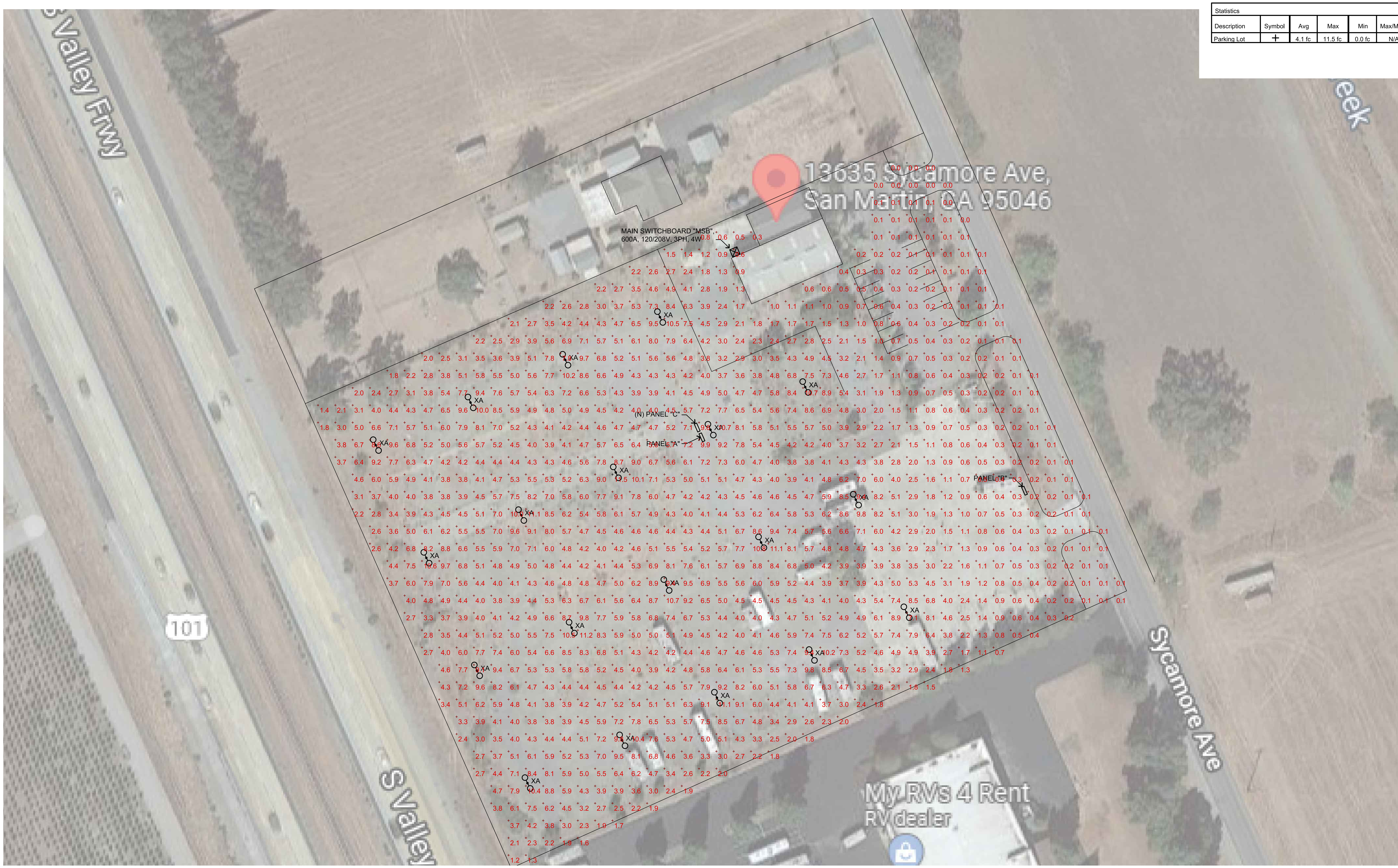
Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Number Lamps	Lumens Per Lamp	Wattage
	X1	19	C-lite	C-AR-A-AL4-22L-xxK-UL--BZ CONFIGURED FROM C-AR-A-AL4-29L-40K-UL--BZ	CONFIGURED FROM C-LITE Area Light, Type IV, 29L Lumen Package, 4000K CCT, 120-277V	1	22000	300

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking Lot	+	4.1 fc	11.5 fc	0.0 fc	N/A	N/A



NO SCALE

NORTH

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Project No. 22-034.00

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REVISIONS	DATE

Project Title:

SAN MARTIN RV LIGHTING

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SAN MARTIN, CA 95046

Sheet Title:

PHOTOMETRIC PLAN

PROGRESS DRAWINGS 02/08/22

STATE OF CALIFORNIA

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Drawn by:	CADD
Date:	02.08.22
Scale:	AS NOTED
Job No.:	22-034.00

E2.2PH

OF . SHEETS

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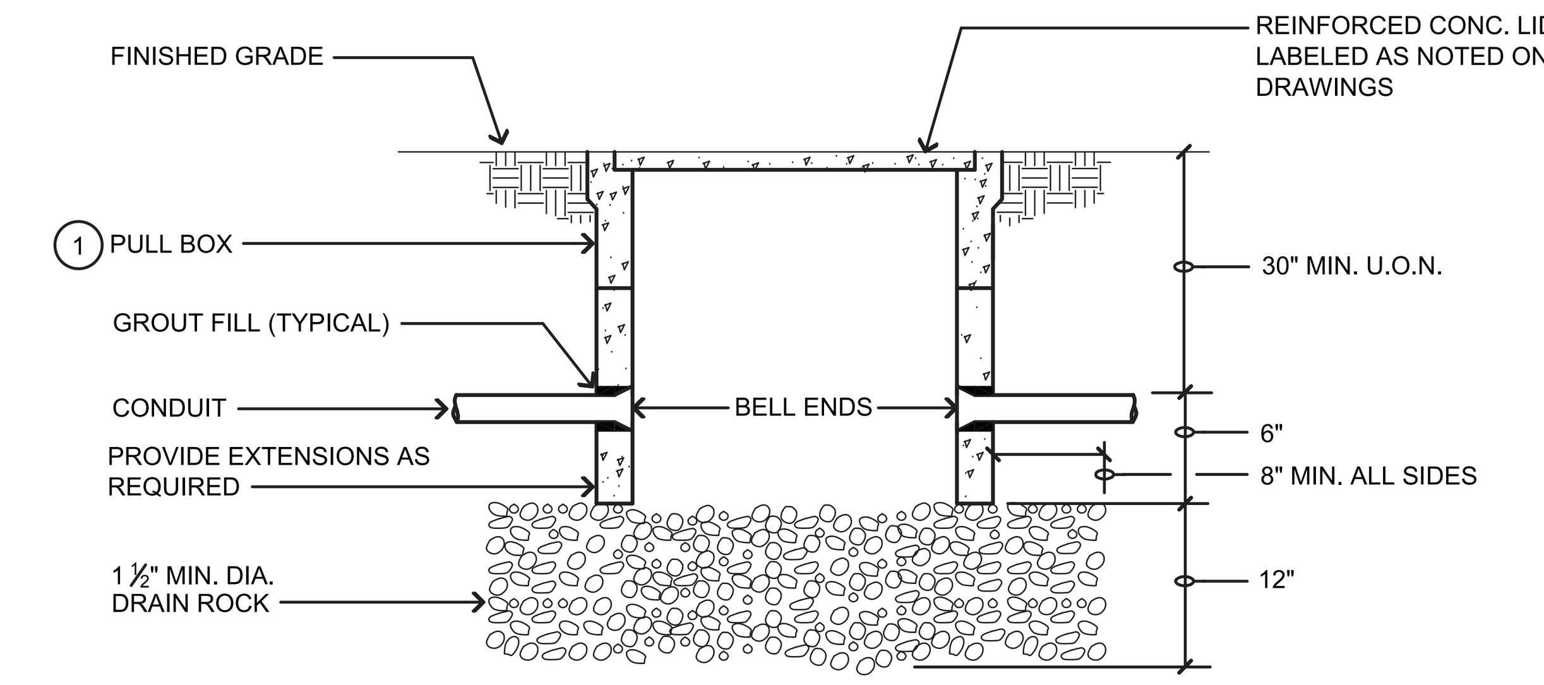
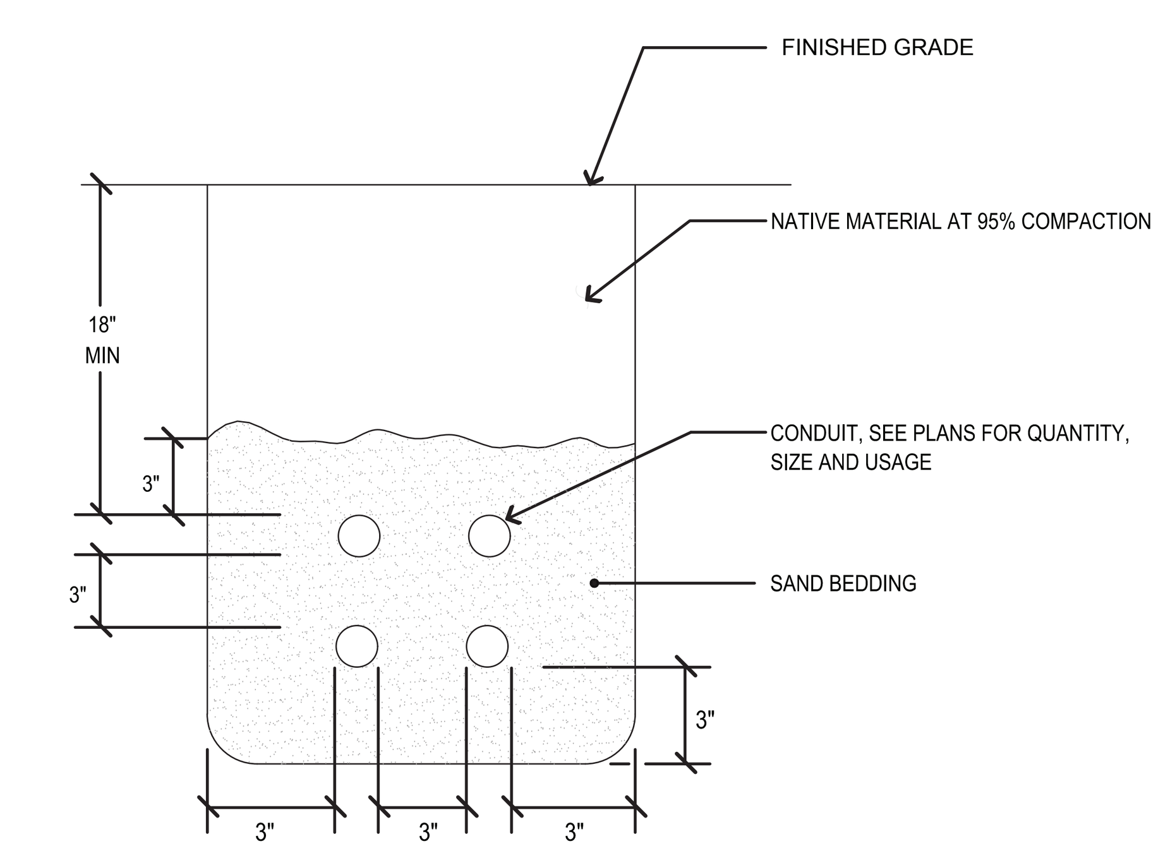
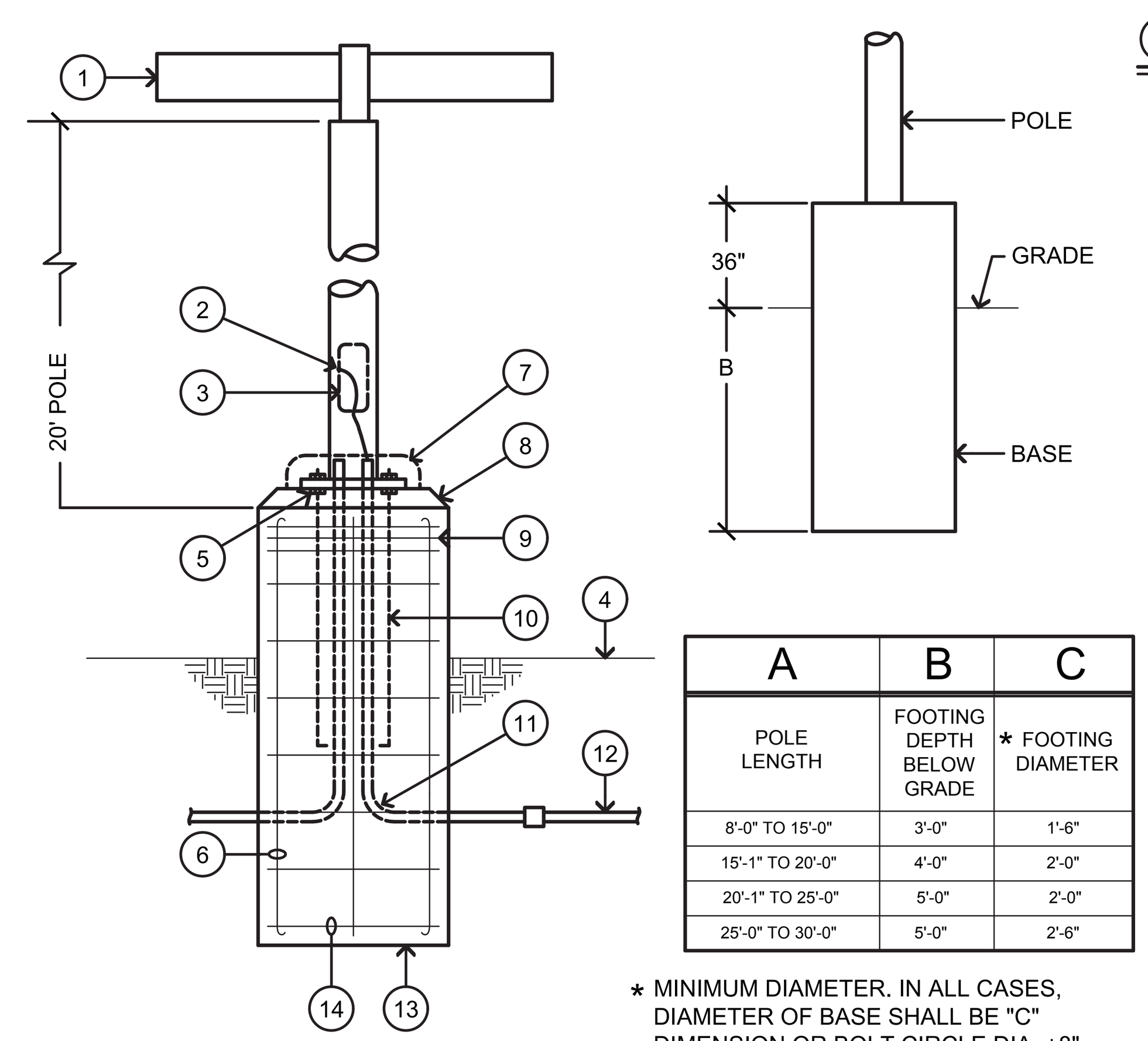
DETAIL NOTES:
1. SIZE(S) & MFGR. AS NOTED ON DRAWINGS.



3 TYPICAL PULLBOX DETAIL
NO SCALE



2 TYPICAL TRENCH SECTION
NO SCALE

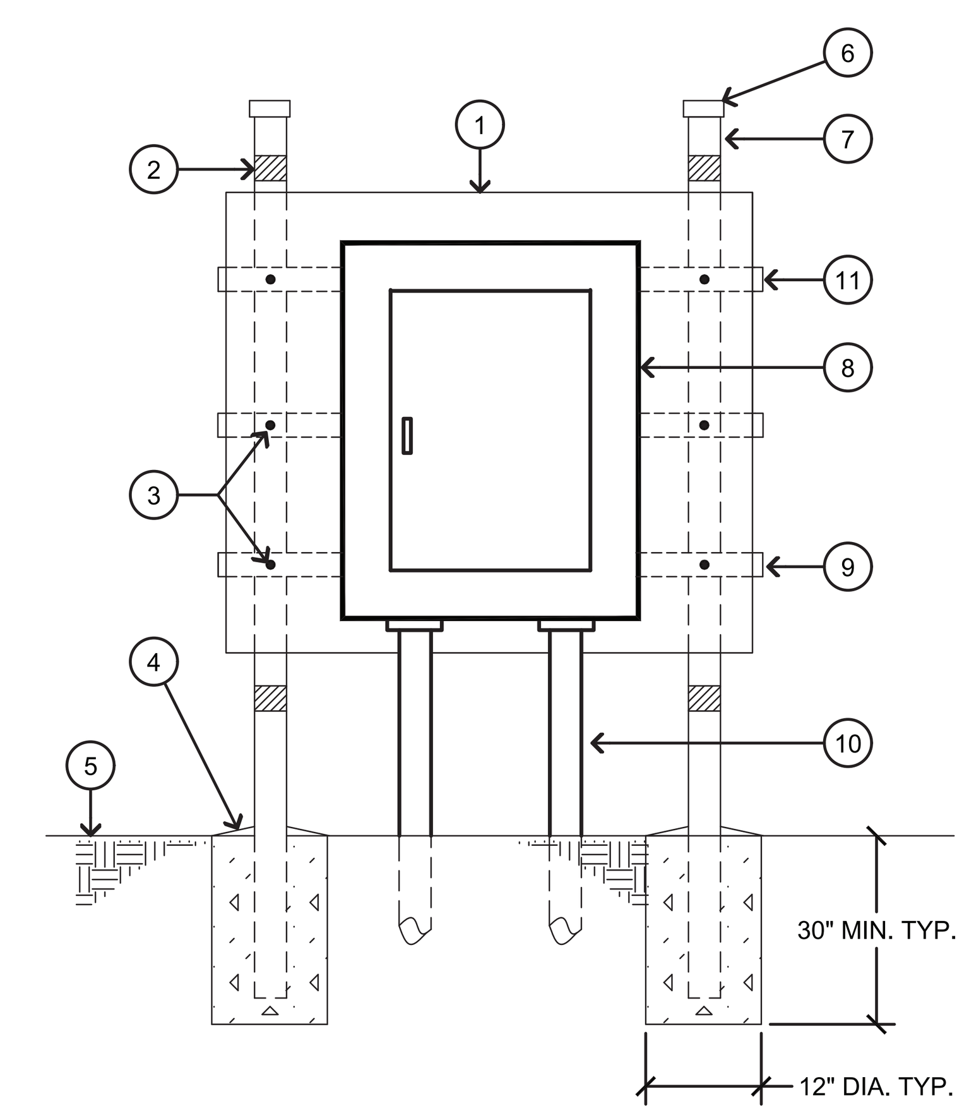


A	B	C
POLE LENGTH	FOOTING DEPTH BELOW GRADE	* FOOTING DIAMETER
8'-0" TO 15'-0"	3'-0"	1'-6"
15'-1" TO 20'-0"	4'-0"	2'-0"
20'-1" TO 25'-0"	5'-0"	2'-0"
25'-0" TO 30'-0"	5'-0"	2'-6"

* MINIMUM DIAMETER. IN ALL CASES, DIAMETER OF BASE SHALL BE "C" DIMENSION OR BOLT CIRCLE DIA. +8" WHICHEVER IS GREATER.

DETAIL NOTES:
1. POLE MOUNTED FIXTURE.
2. GROUND BOND LUG IN POLE.
3. HANDHOLE WITH GASKET COVER.
4. FINISHED GRADE.
5. LEVEL NUTS.
6. 6 #4 VERTICAL BARS EQUALLY SPACED; HOOK ENDS.
7. ANCHOR BOLTS AND BASE COVER.
8. GROUT FILLED WITH 1" x 45° BEVEL AT EDGE.
9. 3 #3 TIES IN UPPER 5" OF BASE.
10. ANCHOR BOLT; QUANTITY & SIZE PER POLE MFGR. FURNISHED WITH POLE. ANCHOR BOLTS SHALL BE WITHIN VERTICAL REBAR CAGE.
11. PVC ELBOW AND RISER.
12. BRANCH CIRCUIT PVC CONDUIT.
13. 3000 P.S.I. AT 28 DAYS CONCRETE FOOTING.
14. #2 HORIZONTAL TIES AT 9" O.C. LAP END.

4 FIXTURE TYPE " " MOUNTING
NO SCALE



DETAIL NOTES:
1. 1" THICK EXTERIOR GRADE PLYWOOD; SEAL BOTH SIDES & ALL EDGES. PAINT WITH (2) COATS GRAY ENAMEL.
2. 3" REFLECTOR TAPE TOP & BOTTOM (TYP.)
3. THRU-BOLTED WITH GALVANIZED HARDWARE AT (6) PLACES
4. CONCRETE BASE, SLOPE TO PIPE (TYP.)
5. FINISHED GRADE
6. THREADED STEEL CAP (TYP.)
7. 3" GALVANIZED STEEL PIPE (TYP.)
8. PANEL/TAP BOX/DISCONNECT.
9. UNISTRUT P1000 ACROSS BACK OF BACKBOARD (TYP, 2 PLACES)
10. BRANCH CIRCUITS; SEE PLANS FOR QUANTITIES (TYP.)
11. FILE END ROUND & SMOOTH (NO SHARP EDGES)

1 PANEL MOUNTING DETAIL
NO SCALE

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REVISIONS	DATE

Project Title:
SAN MARTIN RV LIGHTING
13535 SYCAMORE AVE.
SAN MARTIN, CA 95046

Sheet Title:
ELECTRICAL DETAILS

PROGRESS DRAWINGS 02/08/22
STATE OF CALIFORNIA ELECTRICAL EXP. 6/30/22

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Date:	02.08.22
Scale:	AS NOTED
Job No.:	22-034.00

E6.1

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SECTION 26 05 00

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 Description of Work:
- A. Furnish and install all required in-place equipment, conduits, conductors, cables and any miscellaneous materials for the satisfactory interconnection and operation of all associated electrical systems.

1.02 Submittals:
- A. As specified in Division 1. Submit to the Architect shop drawings, manufacturer's data and certificates for equipment, materials and finish, and pertinent details for each system specified. Information to be submitted includes manufacturer's descriptive literature of cataloged products, equipment, drawings, diagrams, performance and characteristic curves as applicable, test data and catalog cuts. Obtain written approval before procurement, fabrication, or delivery of the items to the job site.
- B. Proposed substitutions of products will not be reviewed or approved prior to awarding of the Contract.
- C. Substitutions shall be proven to the Architect or Engineer to be equal or superior to the specified product. Architect's decision is final. The Contractor shall pay all costs incurred by the Architect and Engineer in reviewing and processing any proposed substitutions whether or not a proposed substitution is accepted.
- D. If a proposed substitution is rejected, the contractor shall furnish the specified product at no increase in contract price.
- E. If a proposed substitution is accepted, the contractor shall be completely responsible for all dimensional changes, electrical changes, or changes to other work which are a result of the substitution. The accepted substitution shall be made at no additional cost to the owner or design consultants.

1.03 Quality Assurance:
- A. Codes: All electrical equipment and materials, including installation and testing, shall conform to the latest editions of the following applicable codes:
  1. California Electrical Code (CEC).
  2. Occupational Safety and Health Act (OSHA) standards.
  3. All applicable local codes, rules and regulations.
  4. Electrical Contractor shall posses a C-10 license and all other licenses as may be required. Licenses shall be in effect at start of this contract and be maintained throughout the duration of this contract.
- B. Variances: In instances where two or more codes are at variance, the most restrictive requirement shall apply.
- C. Standards: Equipment shall conform to applicable standards of American National Standards Institute (ANSI), Electronics Industries Association (EIA), Institute of Electrical and Electronics Engineers (IEEE), and National Electrical Manufacturers Association (NEMA).
- D. Underwriter Laboratories (UL) listing is required for all equipment and materials where such listing is offered by the Underwriters Laboratories. Provide service entrance labels for all equipment required by the NEC to have such labels.
- E. The electrical contractor shall guarantee all work and materials installed under this contract for a period of one (1) year from date of acceptance by owner.
- F. All work and materials covered by this specification shall be subject to inspection at any and all times by representatives of the owner. Work shall not be closed in or covered before inspection and approval by the owner or his representative. Any material found not conforming with these specifications shall, within 3 days after being notified by the owner, be removed from premises; if said material has been installed, entire expense of removing and replacing same, including any cutting and patching that may be necessary, shall be borne by the contractor.

1.04 Contract Documents:
- A. Drawings: The Electrical Drawings shall govern the general layout of the completed construction.
  1. Locations of equipment, panels, pullboxes, conduits, stub-ups, ground connections are approximate unless dimensioned; verify locations with the Architect prior to installation.
  2. The general arrangement and location of existing conduits, piping, apparatus, etc., is approximate. The drawings and specifications are for the assistance and guidance of the contractor, exact locations, distances and elevations are governed by actual field conditions. Accuracy of data given herein and on the drawings is not guaranteed. Minor changes may be necessary to accommodate work. The contractor is responsible for verifying existing conditions. Should it be necessary to deviate from the design due to interference with existing conditions or work in progress, claims for additional compensation shall be limited to those for work required by unforeseen conditions as determined by the Architect.
  3. All drawings and divisions of these specifications shall be considered as whole. The contractor shall report any apparent discrepancies to the Architect prior to submitting bids.
  4. The contractor shall be held responsible to have examined the site and compared it with the specifications and plans and to have satisfied himself as to the conditions under which the work is to be performed. He shall be held responsible for knowledge of all existing conditions whether or not accurately described. No subsequent allowance shall be made for any extra expense due to failure to make such examination.

1.05 Closeout Submittals:
- A. Manuals: Furnish manuals for equipment where manuals are specified in the equipment specifications or are specified in Division 1.

1.06 Coordination:
- A. Coordinate the electrical work with the other trades, code authorities, utilities and the Architect.
- B. Provide and install all trenching, backfilling, conduit, pull boxes, splice boxes, etc. for all Utility Company services to the locations indicated on the Drawings. Prior to performing any work, the Electrical Contractor shall coordinate with the various Utility Companies to verify that all such work and materials shown on the Drawings are of sufficient sizes and correctly located to provide services on the site.
- C. Utility Company charges shall be paid by the Owner.
- D. Contractor shall pay all inspection and other applicable fees and procure all permits necessary for the completion of this work.
- E. Where connections must be made to existing installations, properly schedule all the required work, including the power shutdown periods.
- F. When two trades join together in an area, make certain that no electrical work is omitted.

1.07 Job Conditions:
- A. Operations: Perform all work in compliance with Division 1
  1. Keep the number and duration of power shutdown periods to a minimum.
  2. Show all proposed shutdowns and their expected duration on the construction schedule. Schedule and carry out shutdowns so as to cause the least disruption to operation of the Owner's facilities.
  3. Carry out shutdown only after the schedule has been approved, in writing, by the owner. Submit power interruption schedule 15 days prior to date of interruption.
- B. Construction Power: Unless otherwise noted in Division 1 of these specifications, contractor shall make all arrangements and provide all necessary facilities for temporary construction power [from the owner's on site source. Energy costs shall be paid for by the Owner.] [to the site. Energy costs shall be paid by the General Contractor.]

1.08 Safety and Indemnity:
- A. The Contractor is solely and completely responsible for conditions of the job site including safety of all persons and property during performance of the work. This requirement will apply continually and not be limited to normal working hours. The contractor shall provide and maintain throughout the work site proper safeguards including, but not limited to, enclosures, barriers, warning signs, lights, etc. to prevent accidental injury to people or damage to property.
- B. The Contractor performing work under this Division of the Specifications shall hold harmless, indemnify, and defend the Owner, the Engineer, their consultants, and each of their officers, agents and employees from any and all liability claims, losses, or damage arising out of or alleged to arise from bodily injury, sickness, or death of a person or persons and for all damages arising out of injury to or destruction of property arising directly or indirectly out of or in connection with the performance of the work under this Division of the Specifications, and from the Contractor's negligence in the performance of the work described in the construction contract documents, but not including liability that may be due to the sole negligence of the Owner, the Engineer, their Consultants or their officers, agents and employees.
- C. If a work area is encountered that contains hazardous materials, the contractor is advised to coordinate with the owner and it's abatement consultant for abatement of hazardous material by the Owner's Representative. "Hazardous materials" means any toxic substance regulated or controlled by OSHA, EPA, State of California or local rules, regulations and laws. Nothing herein shall be construed to create a liability for Aurum Consulting Engineers regarding hazardous materials abatement measures, or discovery of hazardous materials.

1.09 Access Doors:
- A. The contractor shall install access panels as required where floors, walls or ceilings must be penetrated for access to electrical, control, fire alarm or other specified electrical devices. The minimum size panel shall be 14" x 14" in usable opening. Where access by a service person is required, minimum usable opening shall be 18" x 24".

1.10 Arc Flash:
- A. The contractor shall install a clearly visible arc flash warning to the inside door of all panelboards and industrial control panels, as well as to the front of all switchboards and motor control centers that are a part of this project.
- B. The warning shall have the following wording: line 1 "WARNING" (in large letters), line 2 "Potential Arc Flash Hazard" (in medium letters), line 3 & 4 "Appropriate Personal Protective Equipment and Tools required when working on this equipment".

1.11 All boxes and enclosures for emergency circuits shall be permanently marked with a readily visible red spray painted mark.

PART 2 - PRODUCTS

2.01 Nameplates:
- A. Identify each piece of equipment and related controls with a rigid laminated engraved plastic nameplate. Unless otherwise noted, nameplates shall be melamine plastic 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be 0.5 by 2.5 inches unless otherwise noted. Where not otherwise specified, lettering shall be a minimum of 0.25 inch high normal block style. Engrave nameplates with the inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel or brass screws.

2.02 Finish requirements:
- A. Equipment: Refer to each electrical equipment section of these Specifications for painting requirements of equipment enclosures. Repair any final paint finish which has been damaged or is otherwise unsatisfactory, to the satisfaction of the Architect.
- B. Wiring System: In finished areas, paint all exposed conduits, boxes and fittings to match the color of the surface to which they are affixed.

PART 3 - EXECUTION

3.01 Workmanship:
- A. All electrical equipment and materials shall be installed in a neat and workmanship manner in accordance with the "NECA-1 Standard Practices For Good Workmanship in Electrical Contracting". Workmanship of the entire job shall be first class in every respect.

3.02 Equipment Installations:
- A. Provide the required inserts, bolts and anchors, and securely attach all equipment and materials to their supports.
- B. Do all the cutting and patching necessary for the proper installation work and repair any damage done.
- C. Earthquake restraints: all electrical equipment, including conduits over 2 inches in diameter, shall be braced or anchored to resist a horizontal force acting in any direction as per Title 24, part 2, table 16a-o, part 3.
- D. Structural work: All core drilling, bolt anchor insertion, or cutting of existing structural concrete shall be approved by a California registered structural consulting engineer prior to the execution of any construction. At all floor slabs and structural concrete walls to be drilled, cut or bolt anchors inserted, the contractor shall find and mark all reinforcing in both faces located by means of x-ray, pach-ometer, or prof-ometer. Submit sketch showing location of rebar and proposed cuts, cores, or bolt anchor locations for approval.

3.03 Field Test:
- A. Perform equipment field tests and adjustments. Properly calibrate, adjust and operationally check all circuits and components, and demonstrate as ready for service.
- B. Operational Tests: Operationally test all circuits to demonstrate that the circuits and equipment have been properly installed and adjusted and are ready for full-time service. Demonstrate the proper functioning of circuits in all modes of operation, including alarm conditions.

3.04 Records:
- A. Maintain one copy of the contract Drawing Sheets on the site of the work for recording the "as built" condition. After completion of the work, the Contractor shall carefully mark the work as actually constructed, revising, deleting and adding to the Drawing Sheets as required. As built Drawings shall be delivered to the Architect within ten (10) days of completion of construction.

3.05 Clean Up:
- A. Upon completion of electrical work, remove all surplus materials, rubbish, and debris that accumulated during the construction work. Leave the entire area neat, clean, and acceptable to the Architect.

3.06 Mechanical and Plumbing Electrical Work:
- A. The requirements for electrical power and/or devices for all mechanical and plumbing equipment supplied and/or installed under this Contract shall be coordinated and verified with the following:
  1. Mechanical and Plumbing Drawings.
  2. Mechanical and Plumbing sections of these Specifications.
  3. Manufacturers of the Mechanical and Plumbing equipment supplied.
- B. The coordination and verification shall include the voltage, ampacity, phase, location and type of disconnect, control, and connection required. Any changes that are required as a result of this coordination and verification shall be a part of this Contract.
- C. The Electrical Contractor shall furnish and install the following for all mechanical and plumbing equipment:
  1. Line voltage conduit and wiring.
  2. Disconnect switches.
  3. Manual line motor starters.
- D. Automatic line voltage controls and magnetic starters shall be furnished by the Mechanical and/or Plumbing Contractor and installed and connected by the Electrical Contractor. When subcontracted for by the Mechanical and/or Plumbing Contractor, all line voltage control wiring installed by the Electrical Contractor shall be done per directions from the Mechanical and/or Plumbing Contractor.
- E. All low voltage control wiring for Mechanical and Plumbing equipment shall be installed in conduit. Furnishing, installation and connection of all low voltage conduit, boxes, wiring and controls shall be by the Mechanical and/or Plumbing Contractor.
- F. Manual motor starters, where required, shall have toggle type operators with pilot light and melting alloy type overload relays, SQUARE D COMPANY, Class 2510, Type FG-1P (surface) or Type FS-1P (flush) or ITE, WESTINGHOUSE or GENERAL ELECTRIC equal.

SECTION 26 05 26

GROUNDING

PART 1 - EXECUTION

1.1 Grounding and Bonding:
- A. Grounding and bonding shall be as required by codes and local authorities.
- B. All electrical equipment shall be grounded, including, but not limited to, panel boards, terminal cabinets and outlet boxes.
- C. The ground pole of receptacles shall be connected to their outlet boxes by means of a copper ground wire connecting to a screw in the back of the box.
- D. A green insulated copper ground wire, sized to comply with codes, shall be installed in all conduit runs.
- E. All metal parts of pull boxes shall be grounded per code requirements.
- F. All ground conductors shall be green insulated copper.

SECTION 26 05 42

CONDUITS, RACEWAYS AND FITTINGS

PART 1 - EXECUTION

1.01 Conduit, Raceway and Fitting Installation:
- A. For conduit runs exposed to weather provide rigid metal (GRS).
- B. For conduit run underground, in concrete or masonry block wall and under concrete slabs, install minimum ¾" size nonmetallic (PVC) with PVC elbows. Where conduits transition from underground or under slab to above grade install wrapped rigid metal (GRS) elbows and risers.
- C. For conduit runs concealed in steel or wood framed walls or in ceiling spaces or exposed in interior spaces above six feet over the finished floor, install EMT.
- D. Flexible metal conduit shall be used only for the connection of recessed lighting fixtures and motor connections unless otherwise noted on the Drawings. Liquid-tight steel flexible conduit shall be used for motor connections.
- E. The minimum size raceway shall be 1/2-inch unless indicted otherwise on the Drawings.
- F. Installation shall comply with the CEC.
- G. From pull point to pull point, the sum of the angles of all of the bends and offset shall not exceed 360 degrees.
- H. Conduit Supports: Properly support all conduits as required by the NEC. Run all conduits concealed except where otherwise shown on the drawings.
  1. Exposed Conduits: Support exposed conduits within three feet of any equipment or device and at intervals not exceeding NEC requirements; wherever possible, group conduits together and support on common supports. Support exposed conduits fastened to the surface of the concrete structure by one-hole clamps, or with channels. Use conduit spacers with one-hole clamps.
     - a. Conduits attached to walls or columns shall be as unobtrusive as possible and shall avoid windows. Run all exposed conduits parallel or at right angles to building lines.
     - b. Group exposed conduits together. Arrange such conduits uniformly and neatly.
  2. Support all conduits within three feet of any junction box, coupling, bend or fixture.
  3. Support conduit risers in shafts with Unistrut Superstrut, or approved equal, channels and straps.
- I. Moisture Seals: Provide in accordance with NEC paragraphs 230-8 and 300-5(g).
- J. Where PVC conduit transitions from underground to above grade, provide rigid steel 90's with risers. Rigid steel shall be half-lap wrapped with 20 mil tape and extend minimum 12" above grade.
- K. Provide a nylon pull cord in each empty raceway.
- L. Provide galvanized rigid steel factory fittings for galvanized rigid steel conduit.
- M. Slope all underground raceways to provide drainage; for example, slope conduit from equipment located inside a building to the pull box or manhole located outside the building.
- N. Conduits shall be blown out and swabbed prior to pulling wires.

SECTION 26 05 19

LINE VOLTAGE WIRE AND CABLE

PART 1 - PRODUCTS

1.01 Conductors:
- A. Conductors shall be copper, type THHN/THWN/MTW oil and gasoline resistant, 600 volt rated insulation.
- B. Conductors shall be stranded copper.
- C. Minimum power and control wire size shall be No. 12 AWG unless otherwise noted.
- D. All conductors used on this Project shall be of the same type and conductor material.

1.02 Terminations:
- A. Manufacturer - Terminals as manufactured by T&B, Burndy or equal.
- B. Wire Terminations - Stranded conductors shall be terminated in clamping type terminations which serve to contain all the strands of the conductor. Curling of a stranded conductor around a screw type terminal is not allowed. For screw type terminations, use a fork type stake-on termination on the stranded conductor. Use only a stake-on tool approved for the fork terminals selected.
- C. End Seals - Heat shrink plastic caps of proper size for the wire on which used.

1.03 Tape:
- A. Tape used for terminations and cable marking shall be compatible with the insulation and jacket of the cable and shall be of plastic material.

PART 2 - EXECUTION

2.01 Cable Installation:
- A. Clean Raceways - Clean all raceways prior to installation of cables as specified in Section 16110 [26 05 42] - Conduits Raceway and Fittings.
- B. All wiring including low voltage wiring shall be installed in conduit, U.O.N.
- C. All feeder conductors shall be continuous from equipment to equipment. Splices in feeders are not permitted unless specifically noted or approved by the Electrical Engineer.
- D. All branch circuit wiring shall be run concealed in ceiling spaces, walls, below floors or in crawl spaces unless noted otherwise.

2.02 Cable Terminations and Splices:
- A. Splices - UL Listed wirenuts.
- B. Terminations - Shall comply with the following:
  1. Make up and form cable and orient terminals to minimize cable strain and stress on device being terminated on.
  2. Burnish oxide from conductor prior to inserting in oxide breaking compound filled terminal.

2.03 Circuit and Conductor Identification:
- A. Color Coding - Provide color coding for all circuit conductors. Insulation color shall be white for neutrals and green for grounding conductors. Conductor colors shall be as follows:

VOLTAGE	208/120V	480/277V
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Grey
Ground	Green	Green

- B. Color coding shall be in the conductor insulation for all conductors #10 AWG and smaller; for larger conductors, color shall be either in the insulation or in colored plastic tape applied at every location where the conductor is readily accessible.
- C. Circuit Identification - All underground distribution and service circuits shall be provided with plastic identification tags in each secondary box and at each termination. Tags shall identify the source transformer of the circuit and the building number(s) serviced by the circuit.

2.04 Field Tests:
- A. All systems shall test free from short circuits and grounds, shall be free from mechanical and electrical defects, and shall show an insulation resistance between phase conductors and ground of not less than the requirements of the CEC. All circuits shall be tested for proper neutral connections.

SECTION 26 05 33

OUTLET, JUNCTION AND PULL BOXES

PART 1 - PRODUCTS

1.01 Outlet boxes, Junction and Pull boxes
- A. Standard Outlet Boxes: Galvanized, steel, knock-out type of size and configuration best suited to the application indicated on the Drawings. Minimum box size shall be 4 inches square (octagon for most light fixtures) by 1-1/2 inches deep with mud rings as required. Boxes used with conduit 1" or larger shall be minimum 2" deep.
- B. Switch boxes: Minimum box size shall be 4 inches square by 1-1/2 inches deep with mud rings as required. Install multiple switches in standard gang boxes with raised device covers suitable for the application indicated.
- C. Conduit bodies: Cadmium plated, cast iron alloy. Conduit bodies with threaded conduit hubs and neoprene gasketed, cast iron covers. Bodies shall be used to facilitate pulling of conductors or to make changes in conduit direction only. Splices are not permitted in conduit bodies. Crouse-Hinds Form 8 Condulets, Appleton Form 35 Unilets or equal.
- D. Sheet Metal Boxes: Use standard outlet or concrete ring boxes wherever possible; otherwise use a minimum 16 gauge galvanized sheet metal, NEMA I box sized to Code requirements with covers secured by cadmium plated machine screws located six inches on centers. Circle AW Products, Hoffman Engineering Company or equal.
- E. Flush Mounted Pull boxes and Junction boxes: Provide overlapping covers with flush head cover retaining screws, prime coated.

PART 2 - EXECUTION

2.01 Outlet Boxes
- A. General:
  1. All outlet boxes shall finish flush with building walls, ceilings and floors except in mechanical and electrical rooms above accessible ceiling or where exposed work is called for on the Drawings.
  2. Install raised device covers (plaster rings) on all switch and receptacle outlet boxes installed in masonry or stud walls or in furred, suspended or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.
  3. Leave no unused openings in any box. Install close-up plugs as required to seal openings.
- B. Box Layout:
  1. Outlet boxes shall be installed at the locations and elevations shown on the drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.
  2. Locate switch outlet boxes on the latch side of doorways.
  3. Outlet boxes shall not be installed back to back nor shall through-wall boxes be permitted. Outlet boxes on opposite sides of a common wall shall be separated horizontally by at least one stud or vertical structural member.
  4. For outlets mounted above counters, benches or backsplashes, coordinate location and mounting heights with built-in units. Adjust mounting height to agree with required location for equipment served.
  5. On fire rated walls, the total face area of the outlet boxes shall not exceed 100 square inches per 100 square feet of wall area.
- C. Supports:
  1. Outlet Boxes installed in metal stud walls shall be equipped with brackets designed for attaching directly to the studs or shall be mounted on specified box supports.
  2. Fixture outlet boxes installed in suspended ceiling of gypsum board or lath and plaster construction shall be mounted to 16 gauge metal channel bars attached to main ceiling runners.
  3. Fixture outlet boxes installed in suspended ceilings supporting acoustical tiles or panels shall be supported directly from the structure above where pendant mounted lighting fixture are to be installed on the box.
  4. Fixture Boxes above tile ceilings having exposed suspension systems shall be supported directly from the structure above.
  5. Outlet and / or junction boxes shall not be supported by grid or fixture hanger wires at any locations.

2.02 Junction And Pull Boxes
- A. General:
  1. Install junction or pull boxes where required to limit bends in conduit runs to not more than 360 degrees or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Note that these boxes are not shown on the Drawings.
  2. Locate pull boxes and junction boxes in concealed locations above accessible ceilings or exposed in electrical rooms, utility rooms or storage areas.
  3. Install raised covers (plaster rings) on boxes in stud walls or in furred, suspended or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.
  4. Leave no unused openings in any box. Install close-up plugs as required to seal openings.
  5. Identify circuit numbers and panel on cover of junction box with black marker pen.
- B. Box Layouts:
  1. Boxes above hung ceilings having concealed suspension systems shall be located adjacent to openings for removable recessed lighting fixtures.
- C. Supports:
  1. Boxes installed in metal stud walls shall be equipped with brackets designed for attaching directly to the studs or shall be mounted on specified box supports.
  2. Boxes installed in suspended ceilings of gypsum board or lath and plaster construction shall be mounted to 16 gauge metal channel bars attached to main ceiling runners.
  3. Boxes installed in suspended ceilings supporting acoustical tiles or panels shall be supported directly from the structure above.
  4. Boxes mounted above suspended acoustical tile ceilings having exposed suspension systems shall be supported directly from the structure above.

SECTION 26 05 44

IN-GRADE PULL BOXES

PART 1 - GENERAL

1.01 Description of Work:
- A. The work of this section consists of providing all labor, supervision, tools, materials, and performing all work necessary to furnish and install pre-cast concrete vaults, and pull boxes with necessary excavation.

1.02 Related Work:
- A. See the following specification sections for work related to the work of this section.
  1. 02200 Excavation and Backfill.
  2. 16112 Underground Ducts.

1.03 Submittals:
- A. As specified in Section 16010 and Division 1.
  1. Catalog Data: Provide manufacturer's descriptive literature - Pre-cast Vaults, Pull Boxes and Accessories.

PART 2 - PRODUCTS

2.01 Materials and Equipment:
- A. General Requirements:
  1. Pull boxes for electrical power, controls and other communication circuits shall consist of pre-cast reinforced concrete boxes, extensions' bases, and covers as specified herein and as indicated on the Drawings. Pre-cast units shall be the product of a manufacturer regularly engaged in the manufacture of pre-cast vaults and pull boxes. Acceptable manufacturers are Christy, Utility Vault, Brooks, Associated Concrete or equal.
- B. Construction:
  1. Pre-cast concrete vaults and pull boxes for electrical power distribution and communication circuits with associated risers and tops shall conform to ASTM C478 and ACI 318. Pull boxes shall be the type noted on the Drawings and shall be constructed in accordance with the applicable details as shown. Tops and walls shall consist of reinforced concrete. Walls and bottom shall be of monolithic concrete construction. Duct entrances and windows shall be located near the corners of structures to facilitate cable racking.
- C. Covers:
  1. The word "ELECTRICAL" shall be cast in the top face of all electrical cable boxes. The word "Signal" or "Fire Alarm" shall be cast in the top of the boxes utilized for these systems.

PART 3 - EXECUTION

3.01 Installation:
- A. Pre-cast pull boxes shall be installed approximately where indicated on the Drawings. The exact location of each pull box shall be determined after careful consideration has been given to the location of other utilities, grading, and paving. All cable boxes and secondary pull boxes shall be installed with a minimum of 6-inch thick crushed rock or sand bedding.
- B. Paved areas - Vaults and pull boxes located in areas to be paved shall be installed such that the top of the cover shall be flush with the finished surface of the paving.
- C. Unpaved Areas - In unpaved areas, the top of vaults and pull box covers shall be approximately 2 inches above finished grade.
- D. Joint Seals - Section joints of pre-cast vaults and pull boxes shall be sealed with compound as recommended by the manufacturer.
- E. Trenching, Backfilling, and Compaction - Trenching, backfilling and compaction shall be as specified in Section 02200 - Excavation and Backfill.

SECTION 26 27 26

DEVICES WIRING

PART 1 - PRODUCTS

1.01 Receptacles:
- A. General - Receptacles shall be heavy duty, high abuse, grounding type.
- B. Duplex Receptacles:
  1. Receptacles shall be specification grade, rated 20 ampere, two-pole, 3-wire, 120 volt, NEMA 5-20 configuration, self-grounding with screw terminals. Color shall be as selected by the Architect.
  2. Devices shall have a nylon face, back and side wired.
  3. Manufacturer: Hubbell #DR20 Series, Leviton #5825 Series.
- C. GFCI Receptacles:
  1. Device shall be rated 20 ampere, 2-pole, 3-wire, 120 volt, conforming to NEMA 5-20 configuration. Face shall be nylon composition. Unit shall have an LED type red indicator light, test and reset push buttons. Color shall be as selected by the Architect.
  2. GFCI component shall meet UL 943 Class A standards with a tripping time of 1/40 second at 5 milliamperes current unbalance. Operating range shall extend from -31°F to 158°F. Unit shall have transient voltage protection and shall be ceramic encapsulated for protection against moisture.
  3. Manufacturer: Hubbell #GF20_ _LA Series, Leviton #7899 Series.
- D. Automatically Controlled Receptacles [Tamper Resistant]
  1. Receptacles shall be specification grade, rated 20 amperes, two pole, 3-wire, 125V, NEMA 5-20 configuration, self-grounding with screw terminals. Color shall be selected by the Architect.
  2. Devices shall have a nylon face, back and side wired. Marking permanently printed, molded, or stamped on the face of the receptacle and in compliance with controlled receptacle marking requirements stated in California Building Energy Efficiency Standards Section 130.5(d)(3).
  3. Manufacturer: Pass & Seymour 26352_D, 26352_H (Half Switched Receptacles) [TR26352_D, TR26352_H (Half Switched Receptacles); Hubble XXX_X, XXXXX_X (Half Switched Receptacles) [TRXXX_X, TRXXX_X (Half Switched Receptacles); Leviton XXX_X, XXX_X (Half Switched Receptacles) [TRXXX_X, TRXXX_X (Half Switched Receptacles).
- E. Surge Suppression Receptacles:
  1. Device shall be rated 20 ampere, 2-pole, 3-wire, 120 volt. Face shall be nylon composition. Unit shall have an LED type "Power-on" indication light and damage-alert audible alarm. Color shall be as selected by the Architect.
  2. Surge suppression protection shall be listed to UL standard 1449 and shall instantly absorb a transient surge of 6,000 volts minimum. A minimum of four (4) Metal Oxide Varistors shall be utilized to absorb transients.
  3. Manufacturer: Hubbell #HBL8362S Series, Leviton #8380 Series.

1.02 Switches:
- A. Switches shall be rated 20 amperes to 120/277 volts ac. Units shall be flush mounted, self-grounding, quiet operating toggle devices. Handle color shall be as selected by the Architect.
  1. Manufacturer: Hubbell #HBL1221 Series, Leviton #1221 Series
- B. Timed switches: Shall be as designed by Paragon Electric Company # ET2000f or Watt Stopper TS-200 rated for the voltage specified on drawings. Time out shall be adjustable from 5 minutes up to 12 hours. Unit shall be provided with warning alarm.

1.03 Plates:
- A. General - Plates shall be of the style and color to match the wiring devices, and of the required number of gangs. Plates shall conform with NEMA WD 1 , UL 514 and FS W-P-455A. Plates on finished walls shall be non-metallic or stainless steel. Plates on unfinished walls and on fittings shall be of zinc plated steel or case metal and shall have rounded corners and beveled edges.
- B. Non-Metallic: Plates shall be plain with beveled edges and shall be nylon or reinforced fiberglass.
- C. Stainless Steel: Plates shall be .040 inches thick with beveled edges and shall be manufactured from No. 430 alloy having a brushed or satin finish.
- D. Cast Metal: Plates shall be cast or malleable iron covers with gaskets so as to be moisture resistant or weatherproof.
- E. Blank Plates: Cover plates for future telephone outlets shall match adjacent device wall plates in appearance and construction.

PART 2 - EXECUTION

2.01 Installation of Wiring Devices:
- A. Interior Locations: In finished walls, install each device in a flush mounted box with washers as required to bring the device mounting strap level with the surface of the finished wall. On unfinished walls, surface mount boxes level and plumb.
- B. Mounting Heights: Adjust boxes so that the front edge of the box shall not be farther back from the finished wall plane than 1/4-inch. Adjust boxes so that they do not project beyond the finished wall. Height of device shall be as follows:
  1. Receptacles 15 Inches from finished floor to bottom of box unless otherwise noted on the drawings
  2. Toggle Switches 48 Inches from finished floor to top of box
- C. Receptacles:
  1. Ground each receptacle using a grounding conductor, not a yoke or screw contact.
  2. Install receptacles with connections spliced to the branch circuit wiring in such a way that removal of the receptacle will not disrupt neutral continuity and branch circuit power will not be lost to other receptacles in the same circuit.

2.02 Installation of Wall Plates:
- A. General - Plates shall match the style of the device and shall be plumb within 1/16-inch of the vertical or horizontal.
- B. Interior Locations, Finished Walls: Install non-metallic plates so that all four edges are in continuous contact with the finished wall surfaces. Plaster filling will not be permitted. Do not use oversized plates or sectional plates.
- C. Interior Locations, Unfinished Walls: Install stainless steel or cast metal cover plates.
- D. Exterior Locations: Install cast metal plates with gaskets on wiring devices in such a manner as to provide a rain tight weatherproof installation. Cover type shall match box type. Cover shall be [Lockable] outdoor "in-use" type.
- E. Future Locations: Install blank cover plates on all unused outlets.
- F. Labeling: All switch and receptacle plates shall be labeled on the top portion of the plate with the panelboard and circuit number serving that device. Lettering shall be $\frac{1}{16}$" minimum high, black color, on clear Mylar tape.

2.03 Tests:
- A. Receptacles:
  1. After installation of receptacles, energize circuits and test each receptacle to detect lack of ground continuity, reversed polarity, and open neutral condition.

SECTION 26 24 40

LIGHTING AND APPLIANCE BRANCH CIRCUIT LOAD CENTERS

PART 1 - GENERAL

1.1 Section Includes
- A. Load centers to be furnished and installed at locations as shown on the drawings. Load centers shall be of

the type approved, indicated, and specified herein.

1.2 Service Entrance Label
- A. Load centers identified for use as service equipment are to be labeled for this application.

PART 2 - PRODUCTS

2.1 Manufacturers
- A. Load centers shall be manufactured by Square D Company.

2.2 Enclosures
- A. NEMA Type as shown on the drawings.
- B. Enclosure shall be fabricated of cold rolled steel for NEMA 1 and galvannealed steel or equivalent rust-resistant steel for NEMA 3R.
- C. Indoor Type l enclosures shall have a flush or surface front as noted on drawings and flush cylinder tumble-type lock, all keyed alike, with door and trim finished to match finish and color of surrounding wall.
- D. Outdoor Type 3R enclosures shall have a hasp to secure the cover. Door and trim shall be finished to match finish and color of surrounding wall.
- E. A directory label shall be provided with circuits identified as indicated on the Schedule

2.3 Interiors
- A. Bus bar connections to the branch circuit breakers shall be the distributed phase type and shall accept plug-on circuit breakers. 300-400 A load centers shall accept a 150 A maximum bolt-on breaker in addition to plug-on types.
- B. Short Circuit Current Ratings ampere rms symmetrical short circuit ratings shall be as shown on drawings. This rating shall be established by manufacturer testing of a representative load center with branch circuit breakers installed.

2.4 Short Circuit Current Ratings
- A. Circuit breakers shall be Square D type QO (plug-on) thermal magnetic trip, with an integral crossbar to ensure simultaneous opening of all poles in multi-pole circuit breakers.
- B. Circuit breakers shall have an overcenter, tripfree, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication.
- C. Handles shall have ON, OFF, and "Tripped" positions. In addition, trip indication shall include a VISI-TRIP indicator appearing in the window of the circuit breaker case (through 125 amperes).
- D. Circuit breakers shall be UL Listed in accordance with UL standard 489 with current ratings as noted on the plans. Interrupting ratings shall be selected to provide the required load center short circuit current rating.
- E. Single-pole, 15 and 20 ampere circuit breakers intended to switch fluorescent lighting loads on a regular basis shall have the SWD marking.
- F. Two- and three-pole circuit breakers 15-60 amperes intended for use with air conditioning, heating, and refrigeration equipment having motor group combinations and marked as such shall have the HACR marking.
- G. Provide UL Class A ground fault interrupter circuit breakers where scheduled on drawings.
- H. The following special application circuit breakers or circuit breaker accessories shall be provided where shown on the drawings.
  1. Circuit breakers with remote control switching capability
  2. Circuit breakers for use on high intensity discharge lighting systems
  3. Key operated circuit breakers
  4. Switch neutral circuit breakers
  5. Shunt trip, auxiliary switch, or alarm switch accessories

SECTION 26 24 16

PANELBOARDS AND DISTRIBUTION PANELS

PART 1 - PRODUCTS

1.01 Panelboards:
- A. General: Lighting and Receptacle Panelboards shall be the automatic circuit breaker type. The number and arrangement of circuits, trip ratings, spares and blank spaces for future circuit breakers shall be as shown on the Drawings or, if not shown, 42 circuits. All circuit breakers shall be quick-make, quick-break, thermal-magnetic, bolt-on type (unless otherwise noted on drawings), with 1, 2 or 3 poles as shown, each with a single operating handle. Tandem or piggy-back breakers shall not be used.
- B. Nameplates:
  1. Each panelboard shall have a field mounted identifying, rigid, plastic nameplate giving the panel identification as shown on the Drawings.
  2. Each panelboard shall have a manufacturer's nameplate showing the voltage, bus rating, number of phases, frequency and number of wires.
- C. Construction:
  1. Door and trim shall be finished to match finish type and color of surrounding wall. Box shall be hot-dip galvanized, field finished to match the front.
  2. Panelboards and enclosures shall conform to requirements of all relevant codes. Panelboards shall be suitable for use as service equipment.
  3. Panelboards shall be furnished with hinged trim fronts with key latch and a typed directory card and holder. Panelboard circuits shall be arranged with odd numbers on the left and even numbers on the right. Provide weatherproof, NEMA type 3R enclosures for outdoor installation.
- D. Busbars: Panelboard busbars shall be phase sequence type suitable for bolt-on circuit breakers. All busbars shall be copper.
- E. Circuit Breakers: Circuit breakers shall be the molded case type with trip and interrupting ratings as shown on the Drawings.
- F. Manufacturer:
  1. Panelboard manufacturer shall be be Square D, Siemens or I.E.M., No other panelboard manufacturers are acceptable. Panelboards shall be of the same manufacturer as the switchboard.

1.02 Distribution Panels:
- A. General: Distribution panels shall be the automatic circuit breaker type. The number and arrangement of circuits, trip ratings, spares and blank spaces for future circuit breakers shall be as shown on the Drawings. All circuit breakers shall be quick-make, quick-break, thermal-magnetic bolt-on type, with 1, 2 or 3 poles as shown, each with a single operating handle. Tandem or piggy-back breakers shall not be used.
- B. Nameplates:
  1. Each distribution panel shall have a field mounted, identifying, rigid, plastic nameplate giving the panel identification as shown on the Drawings.
  2. Each distribution panel shall have a manufacturer's nameplate showing the voltage, bus rating, number of phases, frequency and number of wires.
- C. Construction:
  1. Door and trim shall be finished to match color of surrounding wall. Box shall be hot-dip galvanized, field finished to match the front.
  2. Distribution panels and enclosures shall conform to requirements of all relevant codes. Distribution panels shall be suitable for use as service equipment.
  3. Distribution panels shall have a front door with key latch and a typed directory card and permanently attached holder. Adhesive backed holders are not acceptable. Distribution panels circuits shall be arranged with odd numbers on the left and even numbers on the right. Provide weatherproof, NEMA type 3R enclosures for outdoor installation.
- D. Busbars: Distribution panels busbars shall be phase sequence type suitable for bolt-on circuit breakers. All busbars shall be copper, sized for a maximum current density of 1000A psi.
- E. Circuit Breakers: Circuit breakers shall be the molded case type with trip and interrupting ratings as shown on the Drawings.
- F. Manufacturer:
  1. Distribution panel manufacturer manufacturer shall be be Square D, Siemens, I.E.M. or Eaton Cutler Hammer; no other distribution panel manufacturers are acceptable. Distribution panels shall be of the same manufacturer as the switchboard.

PART 2 - EXECUTION

2.01 Mounting:
- A. Panelboards and Distribution Panels shall be mounted with the top of the box 6'-6" above the floor. Panelboards and Distribution Panels shall be plumb within 1/8-inch. The highest breaker operating handle shall not be higher than 72 inches above the floor.

SECTION 26 28 16

CIRCUIT BREAKERS

PART 1 - PRODUCTS

1.01 Circuit Breaker: Each circuit breaker shall consist of the following:
- A. A molded case breaker with an over center toggle-type mechanism, providing quick-make, quick-break action. Each circuit breaker shall have a permanent trip unit containing individual thermal and magnetic trip elements in each pole. Multipole circuit breakers shall have variable magnetic trip elements which are set by a single adjustment to assure uniform tripping characteristics in each pole. Circuit breakers shall be of the bolt-on type unless otherwise noted.
- B. Breaker shall be calibrated for operation in an ambient temperature of 40°C.
- C. Each circuit breaker shall have trip indication by handle position and shall be trip-free.
- D. Three pole breakers shall be common trip.
- E. The circuit breakers shall be constructed to accommodate the supply connection at either end of the circuit breaker. Circuit breaker shall be suitable for mounting and operation in any position.
- F. Breakers shall be rated as shown on Drawings.
- G. Circuit breaker and/or Fuse/circuit breaker combinations for series connected interrupting ratings shall be listed by UL as recognized component combinations for use in the end use equipment in which it is installed. Any series rated combination used shall be marked on the end use equipment per CEC section 110-22.
- H. Breakers shall be UL listed. Circuit breakers shall have removable lugs.
- I. Lugs shall be UL listed for copper and aluminum conductors.
- J. Breakers shall be UL listed for installation of mechanical screw type lugs.
- K. Circuit breakers serving HACR rated loads shall be HACR type. Circuit breakers serving other motor loads shall be motor rated.
- L. Breakers indicated as "current limiting " (CL), shall be of the non-fused type; Square D I-Limiter, Westinghouse Limit-R, or ITE Sentron only.

AURUM CONSULTING ENGINEERS
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REVISIONS	DATE

Project Title:

SAN MARTIN RV LIGHTING
13635 SYCAMORE AVE.
SAN MARTIN, CA 95046

Sheet Title:

ELECTRICAL SPECIFICATIONS

REGISTERED PROFESSIONAL ENGINEER
No. E17789
EXP. 6/30/22
ELECTRICAL
STATE OF CALIFORNIA

PROGRESS DRAWINGS 02/08/22

NOT VALID WITHOUT WET SIGNATURE

Drawn by:	CADD
Date:	02.08.22
Scale:	AS NOTED
Job No.:	22-034.00

E7.1

OF . SHEETS

NOTE: THIS SHEET IS 24" x 36" TO THE EDGES. IF THESE DIMENSIONS ARE INCORRECT, IT IS A REDUCED COPY.