



Subject: Completing the Electrical Panel Load Calculator

Approved: Duane Siemen

PROCEDURE: Completion of and Submission of the Electrical Panel Load Calculator (EPLC) forms

INTENDED AUDIENCE: Facilities Operations Electricians, Licensed Electrical Contractors, Supervisors and Superintendents, Project Managers

PURPOSE: **To provide guidance on filling out the Electrical Panel Load Calculator for permitting purposes**

Definitions:

EPLC – Electrical Panel Load Calculator

HV – High Voltage

LV – Low Voltage

THHN - Heat-resistant thermoplastic wire which is allowed for use in dry to damp locations and rated for a maximum temperature of 90°C (194°F).

THW - Heat- and moisture-resistant thermoplastic wire which is allowed for use in both dry and wet locations but has a lower maximum temperature rating of 75°C (167°F).

VA - Volt Amps

Procedure:

Note 1 – When adding a single receptacle or fixture to an existing circuit, proceed to step 2. Add the receptacles on the circuit per NEC and revise VA Value in EPLC. Perform steps 3 and 4. Submit the revised EPLC, along with pictures, for permitting.

Note 2 – When adding a new breaker for any piece of equipment, follow all steps below.

1. Fill in the Panel Information:

- a. Panel Name or #
- b. HV
- c. LV
- d. Phase
- e. Hertz
- f. Neutral Bus Y/N
- g. Ground Bus Y/N
- h. Wire Type: either THHN or THW
- i. Fed From
- j. # of circuits in panel
- k. Min. Amps

SAMPLE

PANEL	"A"			AUTO CALCULATIONS
HIGH VOLTAGE	208	SYM RMS AMPS	10,000	LOAD 64,380 w
LOW VOLTAGE	120	BREAKER TYPE	THQB	"D" DIVERSITY -3,190 w
PHASE	3	MAIN BKR AMPS	NONE	25% "C" LOAD 0 w
HERTZ	60	FEED TOP/BOTTOM	TOP	TOTAL WATTS 61,190 w
NEUTRAL BUS Y/N	Y	MOUNTING	SURFACE	TOTAL KYA 61
GROUND BUS Y/N	N	COVER TYPE	DOOR IN DOOR	CONN AMPS 170
GND WIRE Y/N	Y	MANUFACTURER	GE	FACTOR AMPS 34
WIRE TYPE	THW			TOTAL AMPS 204
FED FROM	MSWBD	PANEL SIZE		DESIGN AMPS 204
# OF CIRCUITS	42	200 AMPS		# OF CONDUITS 1
MIN. AMPS	0			CONDUIT SIZE 2 1/2"
% FACTOR	20			# OF CABLES 4
BUSSING	COPPER			SIZE OF CABLE #4/0
ISOLATED GND	NO			SIZE OF GND #4

NOTE: As you fill in the information, the Auto Calculations will change.



Subject: Completing the Electrical Panel Load Calculator

Approved: Duane Siemen

- l. Bussing
- m. Isolated Gnd
- n. SYM RMS Amps
- o. Broken Type
- p. Main Bkr Amps
- q. Feed Top/Bottom
- r. Mounting
- s. Cover Type
- t. Manufacturer and part number
- u. Panel Size, in Amps

AUTO CALCULATIONS		
LOAD	64,380	W
"D" DIVERSITY	-3,190	W
25% "C" LOAD	0	W
TOTAL WATTS	61,190	W
TOTAL KYA	61	
CONN AMPS	170	
FACTOR AMPS	34	
TOTAL AMPS	204	
DESIGN AMPS	204	
# OF CONDUITS	1	
CONDUIT SIZE	2 1/2"	
# OF CABLES	4	
SIZE OF CABLE	#4/0	
SIZE OF GND	#4	

Note: Inputting the number of circuits does not auto-populate the Panel Size field. The Panel Size field must be entered manually.

2. Continue to the Circuit section.

- a. Column **B** is the number of the circuits from the panel schedule. NOTE: This does not auto change according to selection j above.
- b. Column **C** is the breakers in the panel. 20A-3P means it is a 20 AMP 3 pole breaker. Ensure you adjust the sizes to reflect what is actually in the panel. Enter "SPACE" for an empty location without a breaker present or when the factory knockout is still present.
- c. Column **D** is the breaker circuit description. Enter "SPACE" for an empty location WITHOUT a breaker present or when the factory knockout is still present. Enter "SPARE" if a breaker is still present but not wired. NOTE: A SPARE breaker with wiring attached is not a SPARE and needs to have its calculated VA load included in the panel calculation. Receptacle loads should have RECEPTACLE included in the description and ROOM# if applicable. Make sure this is updated as this will be your new panel schedule with description.
- d. Column **F** is for continuous loads and receptacle loads. Put a C for continuous loads and a D for receptacle loads.
- e. Column **G, H, and I** are the phase loads in VA, volt-amps. Insert the correct VA for the attached equipment loads per NEC. Use the attached NEC article 220 documentation to help. Receptacle loads can either be calculated using NEC 220, where each and every receptacle is known, or fully loaded if this is unknown.

B	C	D	F	G	H	I
CIR #	BREAKER	CIRCUIT DESCRIPTION		L1	L2	L3
1				3,500		
2	20A-3P	FREEZER			3,500	3,500
5						
7		SPARE				
9	20A-3P	SPARE				
11		SPARE				
13		SPARE				
15	20A-3P	SPARE				
17		SPARE				
19	20A-1P	WAFFLE		2,400		
21	SPACE	SPACE				
23	20A-1P	WAFFLE DISPLAY				2,400
25	20A-1P	SPARE				
27	20A-1P	RECEPTACLES	D		2,500	
29	SPACE	SPACE				
31	20A-1P	SPARE				
33		SPARE				
35	20A-3P	SPARE				
37		SPARE				
39	SPACE	SPACE				
41	SPACE	SPACE				



Subject: Completing the Electrical Panel Load Calculator

Approved: Duane Siemen

3. Attach and submit photos of ALL equipment nameplates to verify new VA loads for permitting.

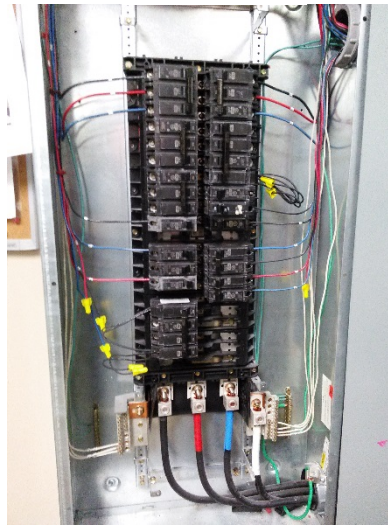
Sample Nameplate

1081 DESIGN	ST 1072
THERMALLY PROTECTED	SKCETS3A8N
MOD. C48K2N117A3	SER. 8K00
VOLTS 115/230	ENCL.= DP
HP 3/4	
ROT = CWPE	PH 1
CODE L	
RPM 3450	FR 56J
HZ 60	
MAX. LOAD	AMPS 14.673
SF 1.5	
RES. B	AMB 50 °C
TYPE UAC	A.O.SMITH CORP. MEXICO

This circuit requires a 15A-1P breaker (15 AMP single pole). VA=1679

4. Attach and submit photo of panel with cover off.

SAMPLE



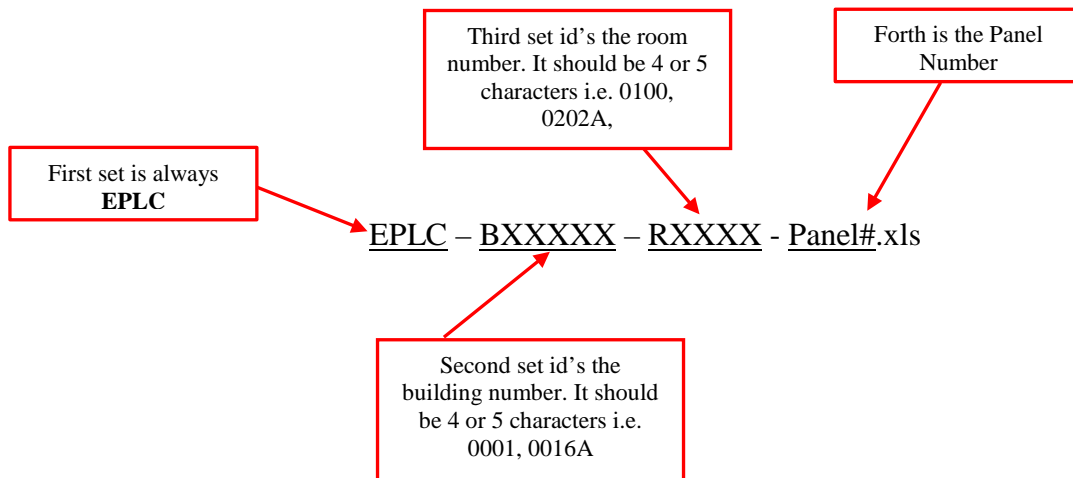


Subject: Completing the Electrical Panel Load Calculator

Approved: Duane Siemen

- When all fields of the EPLC have been completed, save the spreadsheet with the following naming format, and submit all documents and photos to Permitting on a USB:

Standardized EPLC File naming



Example : EPLC-B0021-R0132-Panel#LB2-2.xls

- The ELPC form, all necessary pictures, and nameplate data are to be submitted to the Building Code Official at time of Permit Application submission.

Additional documentation:

- National Electric Code 2011
- NEC Art. 220