Tentative Interim Amendment

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2020 Edition

Reference: Annex D3
TIA 20-6
(SC 19-8-24 / TIA Log #1455)

Note: Text of the TIA was issued and approved for incorporation into the document prior to printing.

1. Revise Annex Example D3 to read as follows:

Example D3 Store Building
A store ~~50~~80 ft by 60 ft, or ~~3000~~ 4,800 ft^2, has 30 ft of show window. There are a total of 80 duplex receptacles. The service is 120/240 V, single phase 3-wire service. Actual connected lighting load is ~~8500~~ 7,000 VA, all of which for this example is considered continuous. All calculations are rounded up or down as permitted in 220.5(B).

Calculated Load
(see 220.40)

Noncontinuous Loads		
Receptacle Load *(see 220.44)*		
80 receptacles at 180 VA		14,400 VA
10,000 VA at 100%		10,000 VA
14,400 VA - 10,000 VA = 4,400 VA at 50%		2,200 VA
	Subtotal	12,200 VA
Continuous Loads		
General Lighting*		
~~3000~~4,800 ft^2 at ~~3~~ 1.9 VA/ft^2		~~9,000~~ 9,120 VA
Show Window Lighting Load		
30 ft at 200 VA/ft *[see 220.14(G)]*		6,000 VA
Outside Sign Circuit *[see 220.14(F)]*		1,200 VA
	Subtotal	~~16,200~~16,320 VA
	Subtotal from noncontinuous	12,200 VA
	Total noncontinuous loads + continuous loads =	~~28,400~~28,520 VA

*In the example, the actual connected lighting load at 125% (~~8500~~7,000 × 1.25 VA) is less than the load from Table 220.12, so the required minimum lighting load from Table 220.12 is used in the calculation. Had the actual lighting load × 125% been greater than the value calculated from Table 220.12, the actual connected lighting load would have been used.

Minimum Number of Branch Circuits Required

General Lighting: Branch circuits need only be installed to supply the actual connected load *[see 210.11(B)]*.
~~8500~~ 7,000 VA × 1.25 = ~~10,625~~ 8,750 VA
~~10,625~~ 8,750 VA ÷ 240 V = ~~44~~ 36.45 A for 3-wire, 120/240 V
8,750 VA ÷ 120 V = 72.92 A
The lighting load would be permitted to be served by 2-wire or 3-wire, 15- or 20-A circuits with combined capacity equal to ~~44~~ 36 A or greater for 3-wire circuits or ~~88~~ 73 A or greater for 2-wire circuits. The feeder capacity as well as the number of branch-circuit positions available for lighting circuits in the panelboard must reflect the full calculated load of ~~9000 VA × 1.25 = 11,250~~ 9,120 VA. Lighting loads from Table 220.12 already include 125% for continuous load. See note at bottom of Table 220.12.

Show Window

6,000 VA × 1.25 = 7,500 VA
7,500 VA ÷ 240 V = 31.25 A for 3-wire, 120/240 V
7,500 VA ÷ 120 V = 62.5 A for 2-wire, 120 V

The show window lighting is permitted to be served by 2-wire or 3-wire circuits with a capacity equal to 31 A or greater for 3-wire circuits or ~~62~~ 63 A or greater for 2-wire circuits.

Receptacles required by 210.62 are assumed to be included in the receptacle load above if these receptacles do not supply the show window lighting load.

Receptacles

Receptacle Load:
14,400 VA ÷ 240 V = 60 A for 3-wire, 120/240 V
14,400 VA ÷ 120 V = 120 A for 3-wire, 120/240 V

The receptacle load would be permitted to be served by 2-wire or 3-wire circuits with a capacity equal to 60 A or greater for 3-wire circuits or 120 A or greater for 2-wire circuits.

Minimum Size Feeder (or Service) Overcurrent Protection
(see 215.3 or 230.90)

Subtotal noncontinuous loads		12,200 VA
Subtotal continuous loads not from Table 220.12 at 125% (~~16,200~~ 7,200 VA × 1.25) (sign and show window)		~~20,250~~ 9,000 VA
Subtotal of calculated continuous loads with 125% already included ~~Total~~		~~32,450~~ 9,120 VA
	Total	30,320 VA

~~32,450~~ 30,320 VA ÷ 240 V = ~~135~~ 126 A
The next higher standard size is 150 A *(see 240.6)*.

Minimum Size Feeders (or Service Conductors) Required
[see 215.2, 230.42(A)]

For 120/240 V, 3-wire system,
~~32,450~~ 30,320 VA ÷ 240 V = ~~135~~ 126 A Service or feeder conductor is ~~1/0~~ 1 AWG Cu in accordance with 215.3 and Table 310.16 (with 75°C terminations).

Issue Date: August 6, 2019

Effective Date: August 26, 2019