ARTICLE 220: BRANCH CIRCUIT, FEEDER, AND SERVICE CALCULATIONS (OTHER THAN DWELLING UNITS)

PART I: GENERAL REQUIREMENTS FOR CALCULATION METHODS
PART II: BRANCH CIRCUIT CALCULATIONS
PART III: GENERAL METHOD FOR FEEDER & SERVICE CALCULATIONS
PART IV: OPTIONAL METHODS FOR FEEDER & SERVICE CALCULATIONS
PART V: FARM LOAD CALCULATIONS

RECOGNIZE the difference between *connected load* and *demand load.* For example, if a commercial building has 100 wall receptacles, it is unlikely that all of them are used simultaneously. Under average use, only half of them may have a cord plugged in. This concept applies to many commercial electrical loads. The expected usage at any one time is the *demand* load.

BRANCH CIRCUIT, FEEDER, AND SERVICE CALCULATIONS are based on the DEMAND load, not the connected load. Article 220 provides specific calculations for determining the minimum demand. To arrive at a feeder or service size, compute the branch circuit demands using Part II, add them together, and then apply any feeder/service demands from Parts III or IV.

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1. Determine general lighting load — Table 220.12

Use va per square foot (outside dimensions) according to occupancy.

2. Calculate general-use receptacle load

Use 180va per receptacle — 220.14 (I)
Omit these receptacles in hotel guest rooms; they are included in general lighting. — 220.14 (M)
In banks & office buildings, use the LARGER of 180va or 1va per square foot. — 220.14 (K)

3. Apply general-use receptacle demand

Calculate Step 2 total at 100% for first 10kva plus 50% of remainder — Table 220.44

Optionally, general-use receptacles calculated at 180va in warehouses or in hotels/motels can be added to the general lighting load and subjected to the demand factors shown in Table 220.42. This special demand calculation applies only to warehouses & hotels/motels, as shown in the table.

***4.* Add other loads. Scan Parts II & III of this Article:**

Signs, 220.14 (F)
Show Windows, 220.43 (A)
Track Lighting, 220.43 (B)
Motors including AC units, 220.50 (Tables 430.248- 250 for FLC)
Fixed Electric Space Heating, 220.51
Commercial Cooking Equipment, 220.56
Specific-purpose calculations, Tbl. 220.3
Other loads, 220.14 (A)
Check for Non-Coincident Loads, 220.60

***5.* Total all items and divide by the service voltage to determine the minimum amperage required. See Table 240.6 (A) for standard overcurrent device ratings.**