Calculated Load for Neutral

9482 VA ÷ 240 V= 39.5 A

Minimum Size Feeders Required from Service Equipment to Meter Bank (For 20 Dwelling Units — 10 with Ranges)

Total Calculated Load:	
Lighting and Small Appliance	
20 units × 5520 V	110,400 VA
Application of Demand Factor	
First 3000 VA at 100%	3,000 VA
110,400 VA - 3000 VA = 107,400 VA at 35%	37,590 VA
Net Calculated Load	40,590 VA
Range Load: 10 ranges (not over 12 kVA) *(see Col. C, Table 220.55,25 kW)*	25,000 VA
Net Calculated Load (with ranges)	65,590 VA

Net calculated load for 120/240-V, 3-wire system,

65,590 VA ÷ 240 V = 273 A

Feeder Neutral

Lighting and Small-Appliance Load	40,590 VA
Range Load: 25,000 VA at 70% *[see 220.61(B)]*	17,500 VA
Calculated Load (neutral)	58,090 VA

Calculated Load for Neutral

58,090 VA ÷ 240 V = 242 A

Further Demand Factor *[220.61(B)]*

200 A at 100%	200 A
242 A - 200 A = 42 A at 70%	29 A
Net Calculated Load (neutral)	229 A

Minimum Size Main Feeders (or Service Conductors) Required (Less House Load) (For 40 Dwelling Units — 20 with Ranges)

Total Calculated Load:	
Lighting and Small-Appliance Load	
40 units × 5520 V	220,800 VA

Application of Demand Factor *(from Table 220.45)*

First 3000 VA at 100%	3,000 VA
Next 120,000 VA - 3000 VA = 117,000 VA at 35%	40,950 VA
Remainder 220,800 VA - 120,000 VA = 100,800 VA at 25%	25,200 VA
Net Calculated Load	69,150 VA
Range Load: 20 ranges (less than 12 kVA) *(see Col. C, Table 220.55)*	35,000 VA
Net Calculated Load	104,150 VA

For 120/240-V, 3-wire system

Net calculated load of 104,150 VA ÷ 240 V = 434 A

Feeder Neutral

Lighting and Small-Appliance Load	69,150 VA
Range: 35,000 VA at 70% *[see 220.61(B)]*	24,500 VA
Calculated Load (neutral)	93,650 VA

93,650 VA ÷ 240 V = 390 A

Further Demand Factor *[see 220.61(B)]*

200 A at 100%	200 A
390 A – 200 A = 190 A at 70%	133 A
Net Calculated Load (neutral)	333 A

[See Table 310.16 through Table 310.21, and 310.15(B), (C), and (E).]

Example D4(b) Optional Calculation for Multifamily Dwelling

A multifamily dwelling equipped with electric cooking and space heating or air conditioning has 40 dwelling units.

Meters are in two banks of 20 each plus house metering and individual feeders to each dwelling unit.

Each dwelling unit is equipped with an electric range of 8-kW nameplate rating, four 1.5-kW separately controlled 240-V electric space heaters, and a 2.5-kW, 240-V electric water heater. Assume range, space heater, and water heater kW ratings equivalent to kVA. Calculate the load for the individual dwelling unit by the standard calculation (Part III of Article 220).

A common laundry facility is available to all tenants *[see 210.52(F), Exception No. 1]*.

Area of each dwelling unit is 840 ft^2.

Calculated Load for Each Dwelling Unit *(see Part II and Part III of Article 220)*

General Lighting Load:	
840 ft^2 at 3 VA/ft^2	2,520 VA
Electric range	8,000 VA
Electric heat: 6 kVA (or air conditioning if larger)	6,000 VA
Electric water heater	2,500 VA

Minimum Number of Branch Circuits Required for Each Dwelling Unit

General Lighting Load: 2520 VA ÷ 120 V = 21 A or two 15-A, 2-wire circuits, or two 20-A, 2-wire circuits

Small-Appliance Load: Two 2-wire circuits of 12 AWG *[see 210.11(C)(1)]*

Range Circuit *(See Table 220.55, Column B)*:

8000 VA × 80% ÷ 240 V = 27 A on a circuit of three 10 AWG conductors in accordance with 210.19(C)

Space Heating: 6000 VA ÷ 240 V = 25 A Number of circuits *(see 210.11)*

Minimum Size Feeder Required for Each Dwelling Unit *(see 215.2)*

Calculated Load *(see Article 220)*:	
General Lighting	2,520 VA
Small Appliance (two 20-A circuits)	3,000 VA
Subtotal Calculated Load (without range and space heating)	5,520 VA