An eight unit, non-electric heated, row housing complex is to be built. The complex will have 3000w of roadway and ornamental lighting. Each unit is two storeys with outside dimensions of 12m x 10m with full basement. Each unit has a 4000w dryer and 11000w range, and 4000w AC unit. Voltage is 120/240 single-phase.

Calculate:
1. Basic demand watts for each unit. 12 m x 10 m x 2.75 = 8,000W
2. Total demand watts for each unit. 19,000 W
3. Minimum allowable ampacity for the service conductors to each unit. 79A
4. Size of service for each unit. 100A
5. Minimum allowable ampacity for the main service conductors. 386A
6. Size of main service. 400A
7. Conduit size for main service. 3 - 500 kcmil using 5% rule in 78 trade size (3”)
8. Grounding conductor size for main service. No.3 (Table 16)

5. First we must take out the AC load from the basic unit Demand Wattage. (Rule 8-202(3) (a))
   19,000 – 4,000 = 15,000
   
   15,000 W (Largest Unit @ 100%)
   19,500 W (Next two units @ 65%)
   12,000 W (Next two units @ 40%)
   11,250 W (Last three units @25%)
   
   57,750 W Sub Total

6. Minimum allowable service conductor is 92,653/240 = 385.6 A