ECET 4520

Industrial Distribution Systems, Illumination, and the NEC

Feeder and Service Load Calculation

✦

Sizing Feeders and Panels

Article 215 – Feeders

215.2(A)(1) – Minimum Rating and Size for ≤ 600V – General

Feeder conductors shall have an ampacity not less than required to supply the load as calculated in Parts III, IV, and V of Article 220. The minimum feeder-circuit conductor size, before the application of any adjustment or correction factors*, shall have an allowable ampacity not less than the non-continuous load plus 125% of the continuous load.

* due to ambient temperature and/or number of current-carrying conductors in raceway

215.3 – Overcurrent Protection

Feeders shall be protected against overcurrent in accordance with the provisions of Part I of Article 240. Where a feeder supplies … any combination of continuous and non-continuous loads, the rating of the overcurrent device shall not be less than the non-continuous load plus 125% of the continuous load.

Article 220 – BC/Feeder/Service Calculations

I. General

220.1 – Scope

This article provides requirements for calculating branch-circuit, feeder, and service loads. Part I provides for general requirements for calculation methods. Part II provides calculation methods for branch-circuit loads. Parts III and IV provide calculation methods for feeders and services. Part V provides calculation methods for farms.

Part II – Branch-Circuit Load Calculations (221.10 – 221.18)

Part III – Feeder/Service Load Calculations (221.40 – 221.61)

Part IV – Optional Feeder/Service Load Calculations (221.80 – 221.88)

Part V – Farm Load Calculations(221.100 – 221.103)

Article 220 Part III – Feeder/Service Loads

220.40 – General

The calculated load of a feeder or service shall not be less than the sum of the loads on the branch circuits supplied, as determined by Part II of this article, after any applicable demand factors permitted by Parts III or IV or required by Part V have been applied.

Note that, when determining the feeder or service loads as directed by Part II of Article 220 and applying any permitted demand factors as directed by Parts III and IV of Article 220, care must be taken to separate the continuous loads from the non-continuous loads since Article 215 requires that an additional scaling factor of 125% be applied to the continuous loads when determining the required ampacity of the circuit conductors and the rating of the circuit's overcurrent (short-circuit) protection device.

Article 220 Part III – Feeder/Service Loads

220.42 – General Lighting

The demand factors specified in Table 220.42 shall apply to that portion of the total branch-circuit load calculated for general illumination.

The demand factors shall not be applied in determining the number of branch circuits required for general illumination.

Table 220.42 Lighting Load Demand Factors

Type of Occupancy	Portion of Lighting Load to Which Demand Factor Applies (Volt-Amperes)	Demand Factor (%)
Dwelling units	First 3000 or less at	100
	From 3001 to 120,000 at	35
	Remainder over 120,000 at	25
Hospitals*	First 50,000 or less at	40
	Remainder over 50,000 at	20
Hotels and motels, including apartment houses without provision for cooking by tenants*	First 20,000 or less at	50
	From 20,001 to 100,000 at	40
	Remainder over 100,000 at	30
Warehouses (storage)	First 12,500 or less at	100
	Remainder over 12,500 at	50
All others	Total volt-amperes	100

*The demand factors of this table shall not apply to the calculated load of feeders or services supplying areas in hospitals, hotels, and motels where the entire lighting is likely to be used at one time, as in operating rooms, ballrooms, or dining rooms.

Article 220 Part III – Feeder/Service Loads

220.42 – General Lighting

Note that the demand factors presented in Table 220.42 also apply to the installed lighting load (based on luminaire ratings) if it is known and greater than the minimum general lighting load based on Table 220.12.

Table 220.42 Lighting Load Demand Factors

Type of Occupancy	Portion of Lighting Load to Which Demand Factor Applies (Volt-Amperes)	Demand Factor (%)
Dwelling units	First 3000 or less at	100
	From 3001 to 120,000 at	35
	Remainder over 120,000 at	25
Hospitals*	First 50,000 or less at	40
	Remainder over 50,000 at	20
Hotels and motels, including apartment houses without provision for cooking by tenants*	First 20,000 or less at	50
	From 20,001 to 100,000 at	40
	Remainder over 100,000 at	30
Warehouses (storage)	First 12,500 or less at	100
	Remainder over 12,500 at	50
All others	Total volt-amperes	100

*The demand factors of this table shall not apply to the calculated load of feeders or services supplying areas in hospitals, hotels, and motels where the entire lighting is likely to be used at one time, as in operating rooms, ballrooms, or dining rooms.

Article 220 Part III – Feeder/Service Loads

220.44 – Receptacle Loads (Other than Dwellings Units)

Receptacle loads calculated in accordance with 220.14(H) and (I) shall be permitted to be made subject to the demand factors given in Table 220.42* or Table 220.44.

* In certain circumstances, article 220.44 permits receptacle loads to be added into the general lighting load with the demand factors shown in Table 220.42 applying instead of those shown in Table 220.44.
Due to the complex conditions for which this allowance may be utilized, we will only apply the demand factors shown in Table 220.44 for receptacle loads in non-dwelling units.

Table 220.44 Demand Factors for Non-Dwelling Receptacle Loads

Portion of Receptacle Load to Which Demand Factor Applies (Volt-Amperes)	Demand Factor (%)
First 10 kVA or less at	100
Remainder over 10 kVA at	50

Note – there is a typo in the 2014 NEC, which has Table 220.44 labeled: "Demand Factors for Dwelling Receptacle Loads"

220.14 Other Loads
(H) Fixed Multi-Outlet Assemblies
Simultaneous Use ≥ 180VA/ft
Non-simultaneous Use ≥ 180VA/5ft
(I) Receptacle Outlets
1-3 recept/outlet ≥ 180VA/outlet
4+ recept/outlet ≥ 90VA/recept

Article 220 Part III – Feeder/Service Loads

220.50 – Motor Loads

Motor loads shall be calculated in accordance with 430.24, 430.25, and 430.26 and with 440.6 for hermetic refrigerant motor compressors.

430.24 – Conductors supplying several motors or motors and other loads shall have an ampacity not less than the sum of the following:

(1) – 125 percent of the full-load current rating of the highest rated motor,

(2) – Sum of the full-load current ratings of all the other motors in the group, and

(3) – The non-continuous non-motor load + 125% of the continuous non-motor load.

440.6 – Where so marked, the branch-circuit selection current shall be used instead of the rated-load current to determine the rating or ampacity of the disconnecting means, the branch-circuit conductors and the branch-circuit short-circuit protection.

Article 220 Part III – Feeder/Service Loads

220.60 – Non-Coincident Loads

Where it is unlikely that two or more non-coincident loads will be in use simultaneously, it shall be permissible to use only the largest load(s) that will be used at one time for calculating the total load of a feeder or service.

Examples of loads that may possibly be considered non-coincident loads:
- Electric Heating and Electric Cooling (Air Conditioning) Loads
- Two circuits designed for the operation of a single welder, but at different locations within a facility.

Article 220 Part III – Feeder/Service Loads

220.61(A) – Feeder/Service Neutral Loads – Basic Calculation

The feeder or service neutral load shall be the maximum unbalance of the load determined by this article. The maximum unbalanced load shall be the maximum net calculated load between the neutral and any one ungrounded conductor.

Due to time constraints, neutral load calculations will not be covered. Thus, for purposes of this course, neutral conductors should be sized the same as the ungrounded circuit conductors.

220.61(B) – Feeder/Service Neutrals – Permitted Reductions

220.61(C) – Feeder/Service Neutrals – Prohibited Reductions

Article 220 Part III – Feeder/Service Loads

Calculated Demand-Load

The calculated load of a feeder or service shall not be less than the sum of the loads on the branch circuits supplied, as determined by Part II of this article, after any applicable demand factors permitted by Parts III …

Thus, to calculate the feeder (or service) load:

Apply any applicable demand factors to the loads that are supplied by the feeder (or the service), and sum up all of the adjusted and non-adjusted loads.

Article 408 – Switchboards & Panelboards

III. Panelboards

408.30 – General

All panelboards shall have a rating not less than the minimum feeder capacity required for the load calculated in accordance with Part III, IV, or V of Article 220, as applicable.

408.30 – General

In addition to the requirement of 408.30, a panelboard shall be protected by an overcurrent protective device having a rating not greater than that of the panelboard. This overcurrent protective device shall be located within or at any point on the supply side of the panelboard.

Example – Feeder & Panel Sizing

Given a 208V, 3Φ panel that will serve a 4,000ft² section of an office building, if the office contains the following loads:

- 42 – 80W (40Wx2bulbs) 120V Florescent Interior Lighting Fixtures
- 12 – 60W 120V CFL Interior Lighting Fixtures
- 4 – 300W 120V Exterior Lighting Fixtures
- 62 – Duplex General Purpose Receptacles
- 1 – Large Copiers (2,880VA, 120V)
- 2 – Electric Water Heaters (2,400VA, 120V each)
- 2 – Vending Machines (1,750VA*, 120V and 1,000VA, 120V)
- 1 – AC Compressor (200V 3Φ 23.8RLA 165LRA MinCktAmp 31.2A MaxCB 45A)
- 1 – Central Heating Unit (12,000VA, 200V 3Φ)
- 1 – Air Handler (2hp, 200V 1Φ)

* - Manufacturer guidelines require the 1,750VA vending machine to be supplied by a dedicated 20A branch circuit.

Determine the size of the panel and the feeder's conductors and CB.

Example – General Lighting Load

General Lighting Load

The general lighting load for the office is defined by Table 220.12:

$$4{,}000\text{ft}^2 \times 3.5\text{VA/ft}^2 = 14{,}000\text{VA}$$

Since this value is greater than the actual connected lighting load:

$$42\text{fixtures} \times 80\text{VA/fixture} + 12\text{fixtures} \times 60\text{VA/fixture} = 4{,}080\text{VA}$$

the general lighting load provides the minimum load that must be used in order to determine the minimum number of lighting circuits and the calculated load of those circuits.

As per 210.11, 210.11(A) and 210.11(B) – Branch circuits for lighting … shall be provided to supply the loads calculated in accordance with 220.10. The minimum number of branch circuits shall be determined from the total calculated load and the size or rating of the circuits used. Where the load is calculated on the basis of volt-amperes per square foot, the wiring system up to and including the branch-circuit panelboard(s) shall be provided to serve not less than the calculated load. This load shall be evenly proportioned among multi-outlet branch circuits within the panelboard(s).

Example – Lighting Circuits

General Lighting Circuits

Assuming 120V fixtures, the minimum general lighting load in amps is:

14,000VA / 120V = 117A

and the minimum number of 20A circuits required to serve the load is:

117A / 16A/ckt = 7.3ckts → 8 circuits minimum

Lighting load is typically considered to be continuous load, thus each 20A circuit is limited to 16A continuous load.

The actual lighting fixtures will be arbitrarily distributed across the eight lighting circuits as follows:

- 4 circuits with 8 – 80W FL fixtures per circuit
- 1 circuit with 6 – 80W FL fixtures
- 1 circuit with 4 – 80W FL fixtures
- 2 circuits with 6 – 60W CFL fixtures per circuit

8 – 1P circuits

Since the minimum general lighting load is 14,000VA, if the load is evening distributed across all eight circuits, then the calculated load per circuit is 1,750VA.

Example – Receptacle Circuits

General Purpose Receptacle Circuits

Since the office contains 62 duplex receptacle outlets, is the outlets are rated at 180VA/outlet as per 220.14(I), then the total receptacle load is:

64outlets / 180VA/outlet = 11,520VA

11,520VA / 120V = 96A

Since general purpose receptacle loads are typically considered to be non-continuous, the minimum number of 20A circuits required to serve the receptacle outlets is:

96A / 20A/ckt = 4.8ckts → 5 circuits minimum

11,520VA / 8 circuits = 1,750VA/circuit

To provide better functionality, the receptacle outlets will be arbitrarily distributed evenly across eight receptacle circuits (8 outlets per circuit).

8 – 1P circuits

Example – Other Circuits

Other Branch Circuits

- Outdoor Lights – 1,200VA / 120V = 10A (Continuous) → 15A 1P
- Copier #1 – 2,880VA / 120V = 24A (Non-continuous) → 25A 1P
- Water Heater #1 – 2,400VA / 120V = 20A (Non-continuous) → 20A 1P
- Water Heater #2 – 2,400VA / 120V = 20A (Non-continuous) → 20A 1P
- Vending #1 – 1,750VA / 120V = 15A (Non-continuous) → 20A 1P
- Vending #2 – 1,000VA / 120V = 8A (Non-continuous) → 15A 1P
- AC Compressor – (MinCkt 31.2A MaxCB 45A) (Non-continuous) → 45A 3P
- Central Heat – 10,000VA / √3·200V = 29A (Non-continuous) → 30A 3P
- Air Handler – (2hp 200V 1Φ) Table 430.248 → 13.8A (Continuous) → 30A 2P

440.6(A) Exception 1: The branch-circuit selection current shall be used instead of the rated-load current to determine the rating/ampacity… Since the ampacity is based on the BC selection current, that value is also applied as the rated load for the AC Compressor. √3·200V·31.2A = 10,800VA

200V·13.8A = 2,760VA

Based on Table 430.52 for Inverse Time Breaker

Example – Panelboard Selection

Common Panelboard Ratings & Sizes

Single-Phase, Three-Wire Panelboards

Frame Size (A)	Disconnect Rating (A)	Capacity (# of Poles)
100	100	8, 12, 16, 20
125	125	8, 12, 16, 20, 24
150	150	20, 24, 30
200	200	20, 24, 30, 36, 40

Three-Phase, Four-Wire Panelboards

Frame Size (A)	Disconnect Rating (A)	Capacity (# of Poles)
100	100	16, 20, 24, 30
125	125	20, 24
225	225	24, 30, 36, 42
400	400	30, 42

# of Poles Required:
Lighting Circuits – 8 Poles
Receptacle Circuits – 8 Poles
Other Circuits – 14 Poles
Required # Poles = 30 Poles

Note that, although a panel with a larger number of poles would be required to allow for future expansion, a 30-pole panel will arbitrarily be displayed in order to maximize the size of the figures shown in this presentation.

Example – Panelboard Layout

Initial Panelboard Layout

PANEL SCHEDULE – Panel MSA
___ Amp, 208 Y/ 120 Volt, 3Φ, 4-Wire

Circuit #	Circuit Description	Connected/ Calculated Load VA	Breaker A		Load Multiplier	Adjusted VA/leg (for panel and feeder sizing) A	B	C	Load Multiplier		Breaker A	Connected/ Calculated Load VA	Circuit Description	Circuit #
1	Lights FL1	1750	20								20	1440	Receptacles 1	2
3	Lights FL2	1750	20								20	1440	Receptacles 2	4
5	Lights FL3	1750	20								20	1440	Receptacles 3	6
7	Lights FL4	1750	20								20	1440	Receptacles 4	8
9	Lights FL5	1750	20								20	1440	Receptacles 5	10
11	Lights FL6	1750	20								20	1440	Receptacles 6	12
13	Lights CFL1	1750	20								20	1440	Receptacles 7	14
15	Lights CFL2	1750	20								20	1440	Receptacles 8	16
17	Outdoor Lights	1200	15								20	1750	Vending 1	18
19	Copier 1	2880	25								15	1000	Vending 2	20
21	Water Heater 1	2400	20								30	1380	Air Handler	22
23	Water Heater 2	2400	20								30	1380	Air Handler	24
25	Central Heater	3330	30								45	3600	AC Compressor	26
27	Central Heater	3330	30								45	3600	AC Compressor	28
29	Central Heater	3330	30								45	3600	AC Compressor	30

Although the initial layout of the branch circuits on the panelboard is arbitrary, logically grouping and/or organizing the circuits can help simplify the panel from an operational perspective.

Note that the loads displayed in this panel are the larger of either the actual connected load or the minimum calculated load.

Example – Feeder Load

Determining the Panel's Adjusted Load on the Feeder

PANEL SCHEDULE – Panel MSA
___ Amp, 208 Y/ 120 Volt, 3Φ, 4-Wire

Circuit #	Circuit Description	Connected/ Calculated Load VA	Breaker A		Load Multiplier	Adjusted VA/leg (for panel and feeder sizing) A	B	C	Load Multiplier		Breaker A	Connected/ Calculated Load VA	Circuit Description	Circuit #
1	Lights FL1	1750	20		1.25	3628			1.00		20	1440	Receptacles 1	2
3	Lights FL2	1750	20		1.25		3628		1.00		20	1440	Receptacles 2	4
5	Lights FL3	1750	20		1.25			3628	1.00		20	1440	Receptacles 3	6
7	Lights FL4	1750	20		1.25	3628			1.00		20	1440	Receptacles 4	8
9	Lights FL5	1750	20		1.25		3628		1.00		20	1440	Receptacles 5	10
11	Lights FL6	1750	20		1.25			3628	1.00		20	1440	Receptacles 6	12
13	Lights CFL1	1750	20		1.25	3628			1.00		20	1440	Receptacles 7	14
15	Lights CFL2	1750	20		1.25		3628		1.00		20	1440	Receptacles 8	16
17	Outdoor Lights	1200	15		1.25			3250	1.00		20	1750	Vending 1	18
19	Copier 1	2880	25		1.00	3880			1.00		15	1000	Vending 2	20
21	Water Heater 1	2400	20		1.00		3780		1.00		30	1380	Air Handler	22
23	Water Heater 2	2400	20		1.00			3780	1.00		30	1380	Air Handler	24
25	Central Heater	3330	30		0.90	4500			1.25		45	3600	AC Compressor	26
27	Central Heater	3330	30		0.80		4500		1.25		45	3600	AC Compressor	28
29	Central Heater	3330	30		0.80			4500	1.25		45	3600	AC Compressor	30

	VA	A
Phase A Load	19264	161
Phase B Load	19164	160
Phase C Load	18786	157

	VA	A
Total Load	57214	159

Continuous Loads

Based on 220.60: Since the Central Heating Unit and the AC Compressor are non-coincident loads, only the larger of the two loads is used when determining the total load on the feeder.

Based on 430.24: Conductors supplying motors and other loads shall have an ampacity not less than the sum of each of the following:
- 125% of the full-load rating of the highest rated motor,
- 100% of the full-load ratings of all the other motors,
- 125% of the ratings of the continuous non-motor loads,
- 100% of the ratings of the non-continuous non-motor loads.

Other Motor

Largest Motor

Example – Feeder Load

Applying any Allowable Demand Factors

Based on the previous calculations, the panel's load on the feeder is:

57,210VA

As an office, the demand factor for lighting loads is 100%. (Table 220.42)

But, based on Table 220.44, the demand factor for the portion of the receptacle loads over 10kVA is 50%. Since the panel's receptacle load is 11,520VA, 50% of 1,520VA can be deducted from the total load:

57,210VA – 0.5 x 1,520VA = 56,450VA

There are no other applicable demand factors for this specific case.

	VA	A
Phase A Load	19264	161
Phase B Load	19164	160
Phase C Load	18786	157

	VA	A
Total Load	57214	159

Demand Load on Feeder ≡ 56,450VA

Example – Feeder Load

Allowing for Future Expansion

Although the total demand load on the feeder is:

56,450VA

this value does not allow for any future expansion of the system.

To provide a safety margin for potential increases in system load, the calculated demand load will be increased by 25% for the purpose of sizing both the feeder and the panel:

56,450VA x 1.25 = 70,560VA

	VA	A
Phase A Load	19264	161
Phase B Load	19164	160
Phase C Load	18786	157

	VA	A
Total Load	57214	159

Demand Load on Feeder ≡ 56,450VA

Future Load on Feeder ≡ 70,560VA

Example – Feeder Size & Panel Size

Sizing the Feeder Conductors and the Panel

Based on a future demand load of 70,560VA, the feeder conductors must have an ampacity that is not less than:

$$70{,}560\text{VA} / (\sqrt{3} \cdot 200) = 204\text{A}$$

Assuming that there are no required adjustments due to ambient temperature or # of conductors in the raceway, Table 310.15(B)(16) displays an ampacity of 230A for 4/0 copper conductors at 75°C.

Furthermore, the next larger standard CB is 225A, and the next large standard panel size is 225A.

Note that 430.62(B) allows the rating or setting of the feeder overcurrent protective device shall be permitted to be based on the ampacity of the feeder conductors if the feeder conductors have an ampacity greater than required by 430.24.

	VA	A
Phase A Load	19264	161
Phase B Load	19164	160
Phase C Load	18786	157

	VA	A
Total Load	57214	159

Demand Load on Feeder ≡ 56,450VA

Future Load on Feeder ≡ 70,560VA

Example – Feeder Size & Panel Size

Complete Panel Schedule w/ Feeder Size and CB Rating

Note that the previous example assumes the ideal case where the loads are equally balanced across the available phases.

This makes sense considering that the unbalance between the phases is less than 3%.

PANEL SCHEDULE – Panel MSA

225 Amp, 208 Y/ 120 Volt, 3Φ, 4-Wire

Circuit #	Circuit Description	Connected/ Calculated Load VA	Breaker A	Load Multiplier	Adjusted VA/leg (for panel and feeder sizing) A	B	C	Load Multiplier	Breaker A	Connected/ Calculated Load VA	Circuit Description	Circuit #
1	Lights FL1	1750	20	1.25	3628			1.00	20	1440	Receptacles 1	2
3	Lights FL2	1750	20	1.25		3628		1.00	20	1440	Receptacles 2	4
5	Lights FL3	1750	20	1.25			3628	1.00	20	1440	Receptacles 3	6
7	Lights FL4	1750	20	1.25	3628			1.00	20	1440	Receptacles 4	8
9	Lights FL5	1750	20	1.25		3628		1.00	20	1440	Receptacles 5	10
11	Lights FL6	1750	20	1.25			3628	1.00	20	1440	Receptacles 6	12
13	Lights CFL1	1750	20	1.25	3628			1.00	20	1440	Receptacles 7	14
15	Lights CFL2	1750	20	1.25		3628		1.00	20	1440	Receptacles 8	16
17	Outdoor Lights	1200	15	1.25			3250	1.00	20	1750	Vending 1	18
19	Copier 1	2880	25	1.00	3880			1.00	15	1000	Vending 2	20
21	Water Heater 1	2400	20	1.00		3780		1.00	30	1380	Air Handler	22
23	Water Heater 2	2400	20	1.00			3780	1.00	30	1380	Air Handler	24
25	Central Heater	3330	30	0.80	4500			1.25	45	3600	AC Compressor	26
27	Central Heater	3330	30	0.80		4500		1.25	45	3600	AC Compressor	28
29	Central Heater	3330	30	0.80			4500	1.25	45	3600	AC Compressor	30

	VA	A
Phase A Load	19264	161
Phase B Load	19164	160
Phase C Load	18786	157

	VA	A
Total Load	57214	159

Future Demand Load = 204A
Feeder Conductors: 4/0 Copper
Feeder OCPD: 225A CB

In the case of an unbalanced panel, the feeder and panel must both be sized based on the largest of the individual phase currents. This can be much more complicated, especially when it comes to applying any allowable demand factors.

Furthermore, any unbalance in the system will result in a neutral current that can further increase any voltage drop in the system, thus decreasing the system's operational efficiency.

Although the NEC does not provide specific requirements that limit the overall imbalance in a system, many experts recommend trying to keep the imbalance under full-load conditions to less than 10%.

PANEL SCHEDULE – Panel MSA

225 Amp, 208 Y/ 120 Volt, 3Φ, 4-Wire

Circuit #	Circuit Description	Connected/ Calculated Load VA	Breaker A		Load Multiplier	Adjusted VA/leg (for panel and feeder sizing) A	B	C	Load Multiplier		Breaker A	Connected/ Calculated Load VA	Circuit Description	Circuit #
1	Lights FL1	1750	20		1.25	3628			1.00		20	1440	Receptacles 1	2
3	Lights FL2	1750	20		1.25		3628		1.00		20	1440	Receptacles 2	4
5	Lights FL3	1750	20		1.25			3628	1.00		20	1440	Receptacles 3	6
7	Lights FL4	1750	20		1.25	3628			1.00		20	1440	Receptacles 4	8
9	Lights FL5	1750	20		1.25		3628		1.00		20	1440	Receptacles 5	10
11	Lights FL6	1750	20		1.25			3628	1.00		20	1440	Receptacles 6	12
13	Lights CFL1	1750	20		1.25	3628			1.00		20	1440	Receptacles 7	14
15	Lights CFL2	1750	20		1.25		3628		1.00		20	1440	Receptacles 8	16
17	Outdoor Lights	1200	15		1.25			3250	1.00		20	1750	Vending 1	18
19	Copier 1	2880	25		1.00	3880			1.00		15	1000	Vending 2	20
21	Water Heater 1	2400	20		1.00		3780		1.00		30	1380	Air Handler	22
23	Water Heater 2	2400	20		1.00			3780	1.00		30	1380	Air Handler	24
25	Central Heater	3330	30		0.00	4500			1.25		45	3600	AC Compressor	26
27	Central Heater	3330	30		0.00		4500		1.25		45	3600	AC Compressor	28
29	Central Heater	3330	30		0.00			4500	1.25		45	3600	AC Compressor	30

	VA	A
Phase A Load	19264	161
Phase B Load	19164	160
Phase C Load	18786	157

	VA	A
Total Load	57214	159

Future Demand Load = 204A

Feeder Conductors: 4/0 Copper

Feeder OCPD: 225A CB