Load Demand Calculation Report

1. Industrial/Commercial Base Load
(i) Base Load at 25W/m^2:
- Building Dimensions: 70 ft x 70 ft (two floors)
- Area per Floor: 455.24 m^2
- Total Area: 2 x 455.24 m^2 = 910.48 m^2
- Base Load Calculation:
Base Load = 910.48 m^2 x 25 W/m^2 = 22,762 W

2. Mechanical Load
(ii) Mechanical Load Summary:

Motor Specification	Voltage (V)	Phase	Current (Amps)	Total Power (Watts)
1 x 30.5 Amp @ 208V	208	Single Phase	30.5	6,344
8 x 4 Amp @ 120V	120	Single Phase	4 each	3,840
1 x 5.2 Amp @ 575V	575	Three Phase	5.2	5,178
2 x 3 Amp @ 575V	575	Three Phase	3 each	5,970
2 x 12 Amp @ 120V	120	Single Phase	12 each	2,880
1 x 32.5 Amp @ 575V	575	Three Phase	32.5	32,396
Total Mechanical Load				**56,608 W**

3. Total Building Ampacity Calculation
- Combined Load (Base + Mechanical):
Total Load = 22,762 W + 56,608 W = 79,370 W
Total Ampacity for 3-Phase 600V System:
Total Amps = 79,370\sqrt{3}x600=76.4amps

4. Service Feeder Ampacity Calculation
Inrush Current at 300%: = 76.4amps x 3 = 229.2 amps

Summary:
- Base Load: 22,762 watts.
- Mechanical Load: 56,608 watts.
- Total Load: 79,370 watts.
- Total Operating Curren*: 76.4 amps.
- Inrush Current: 229.2 amps (300% of normal).