General Description

Room Size: 40 ft long, 8 feet wide, 9 feet high.
320 square feet of floor space
2880 cubic feet

Insulation: R15 walls
R22 ceiling
Vapour barrier inside insulation on all walls and ceiling

Entry: 1) light locked entrance from inside of building
2) man door to exterior and loading dock

Lighting: 3 x 40 Watt red lights

Ventilation:
- 10½” diameter squirrel cage fan
- 2300 cubic feet per minute at ¼” back-pressure
  (Dayton Blower: 1725 rpm, 208 Volts, 7.0 Amps, 1 phase)
- intake port: 12” diameter galvanized duct, painted flat black inside
- circulation duct: 30 feet long, 12” reinforced polyethylene duct with perforations equaling the area of the intake port.
- thermostat mounted beside intake with sensor mounted outside
- fan pressurizes room and forces heavy CO₂ laden air out wooden floor ducts (8”x8”) and then out 8” galvanized duct. This metal duct is painted flat black inside.

Refrigeration

Compressor: Bohn Refrigeration Model DBH3H2EC23P
- 230 Volts, 17 Amps, 3 horsepower, 1 phase

Condenser: Bohn Refrigeration Model MAB365OF
- 115 Volts, 12 Amps, ¼ horsepower
- 3 fans (each: ¼ horsepower, 1 phase, 4.0 Amps)

Heating: 2x Q Mark heaters – Marley Electric Co. Model MUH03-21
- 12 Amps each
- 208/230 Volts each
- 2600 Watts each
- 1 phase
- 8” fan on each heater (0.25 Amps each)
**Controls:**
1. electrical heat thermostat
2. cooling thermostat
3. fan time clock
4. fan override switch
5. electrical heat disconnect (heater #1)
6. electrical heat disconnect (heater #2)
7. electrical heat relay
8. ventilation fan relay
9. 10 Amp control fuse
10. fan disconnect
11. intake fan thermostat with sensor mounted inside and outside

**Operation**

**Ventilation:** Timer turns on fan every 30 minutes. All air in room is exhausted under pressure in 1.5 minutes, then fan shuts off.

**Temperature Control**

1) If outside air is **cooler** than desired inside temperature:
   - thermostat with inside and outside temperature sensors turns on fan to cool room with outside air
   - fan still exhausts all air every 30 minutes

2) If outside air is **warmer** than desired inside temperature:
   - air conditioning system cools and circulates inside air
   - fan still exhausts all air every 30 minutes

**Alarm System**
Thermostatically controlled alarm is activated if room temperature changes ±5°C from desired temperature, due to power outage or equipment failure.

**Installations**
Cook and Beals Inc. (Loup City, Nebraska, USA) supplied and installed all equipment with help from F.M. Electric Ltd. and Share-Temp Refrigeration, both of Guelph, Ontario.

**NOTE:** The operating temperature would be 7-9°C (45-48°F) for single story colonies with about 3 pounds of bees. Appropriate temperatures for smaller or larger colonies would be higher or lower, respectively.