

Nordic® DX Case Study

Burgess Contracting Limited
Petitcodiac, N.B.



Building Profile	
Total Area	20,000 sq. ft.
Number of floors	2 16,000 main 4,000 upper
Heat Pump Type	(3) 6-ton DX dual function Heat Pumps
Additional Heat	(1) 300,000 Btu waste oil boiler (1) 36 Kw Electric Boiler
Heat/Cool Distribution	In-floor Radiant Heat / Ducted Cooling

Structure finished in March 1996



Completed Building

East View of Building



Lobby



Parts Counter

Burgess Contracting Ltd.

is a large trucking and general contracting firm which has been located in Canaan, N.B. for over 25 years.

In 1994 they decided to move their operation to Petitcodiac and as part of that move a new 20,000 sq. ft. office and workcenter was constructed. The ground floor of the building comprising 16,000 sq. ft. is divided into 4 main sections including a wash bay, paint shop, repair & maintenance area and offices. The upper floor has facilities for drivers to rest or sleep while their trucks are being repaired or serviced. The owners, Derek and Trevor Burgess researched their project quite carefully and decided that infloor heating coupled with a waste oil burner and geothermal energy was the most economical way to heat the

First Class Design



Btu "Dual-Function" DX heat pumps were installed as the primary and secondary sources of heat.

A 36 Kw electric hot water tank is utilized as a back-up but can be used as a 5th source of heat if required. Cooling for the offices, drivers rest area and part of the shop is provided via an overhead duct system.

The entire system is operated via a computer controlled command system which monitors loop temperature and operates the 5 part heating system on a staged in basis.

The waste oil burner can normally supply 1/2 to 3/4 the required heat for the building however before it was installed the heat pumps and back-up hot water heater showed their capability by providing all the heat required from November 1995 to February of 1996.



building. The in-floor heating also had other advantages in this building such as:

- ⇒ promoting even warmth since the ceiling was 25 ft. high.
- ⇒ Quick drying of floors when wet or snow covered trucks were brought in.
- ⇒ Heating equipment embedded in the concrete where it was safe from damage.

A 300,000 Btu boiler and (3) 65,000

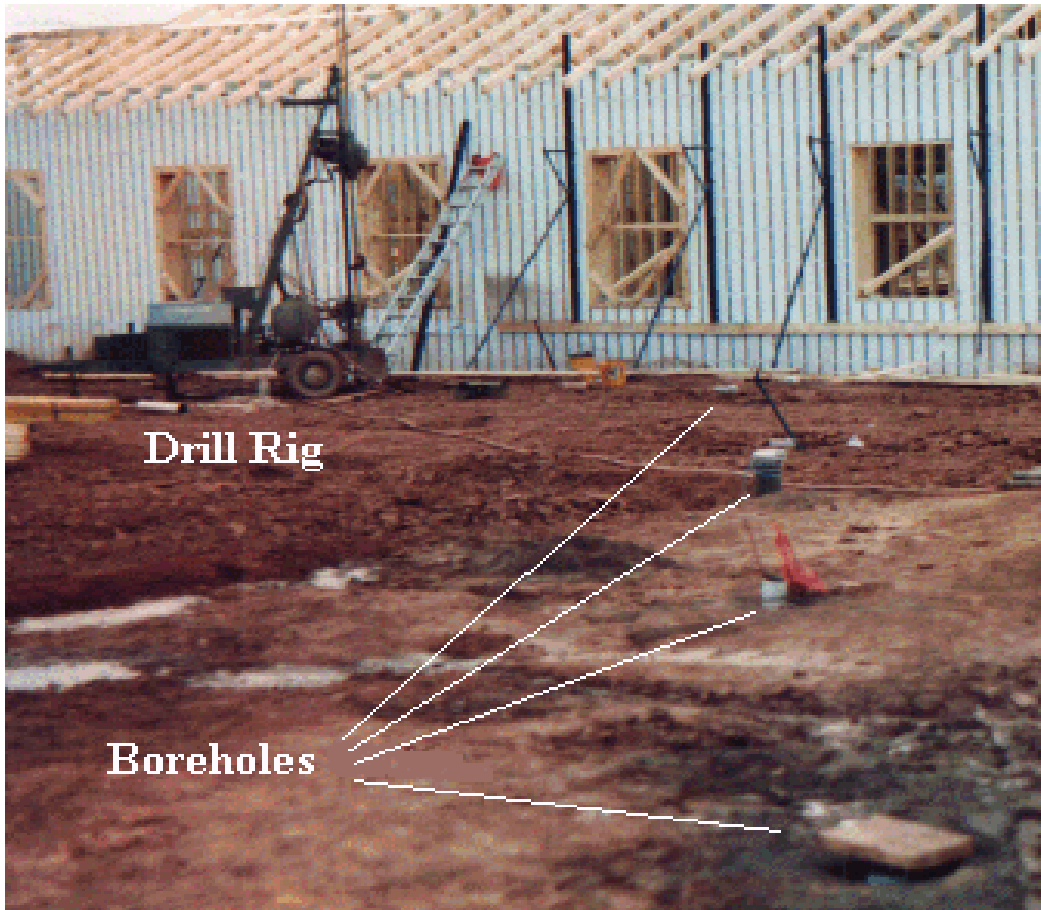
General Construction

- Slab on grade
- 4' frost wall c/w 1.5" styrofoam.
- 2" Styrofoam "SM" under slab.
- Radiant floor heating in all downstairs areas.
- Hot air ducted heating upstairs.
- Ice-Block® construction style walls.
- Wooden truss roof with R-40 insulation.
- Thermopane® glass.
- Air conditioning in offices, parts room, truckers lounge and conference room.
- HRV serving above spaces.

Heat Sources

- (3) 65,000 Btu DX Dual Function
(Hot Water / Cool Air)
Geothermal Heat Pumps.
- (1) 300,000 Btu Waste Oil Boiler.
- (1) 36 Kw Hot Water Tank.

Construction started in November 1994



Drill Rig

Boreholes

Building under construction showing "Ice-Block" wall construction and wooden truss design.



Shown at left is small drill used to bore the 3" holes for DX tubing sets.

Interior Layout Burgess Contracting Ltd. - Petitcodiac, N.B.



1. Mechanical room door.

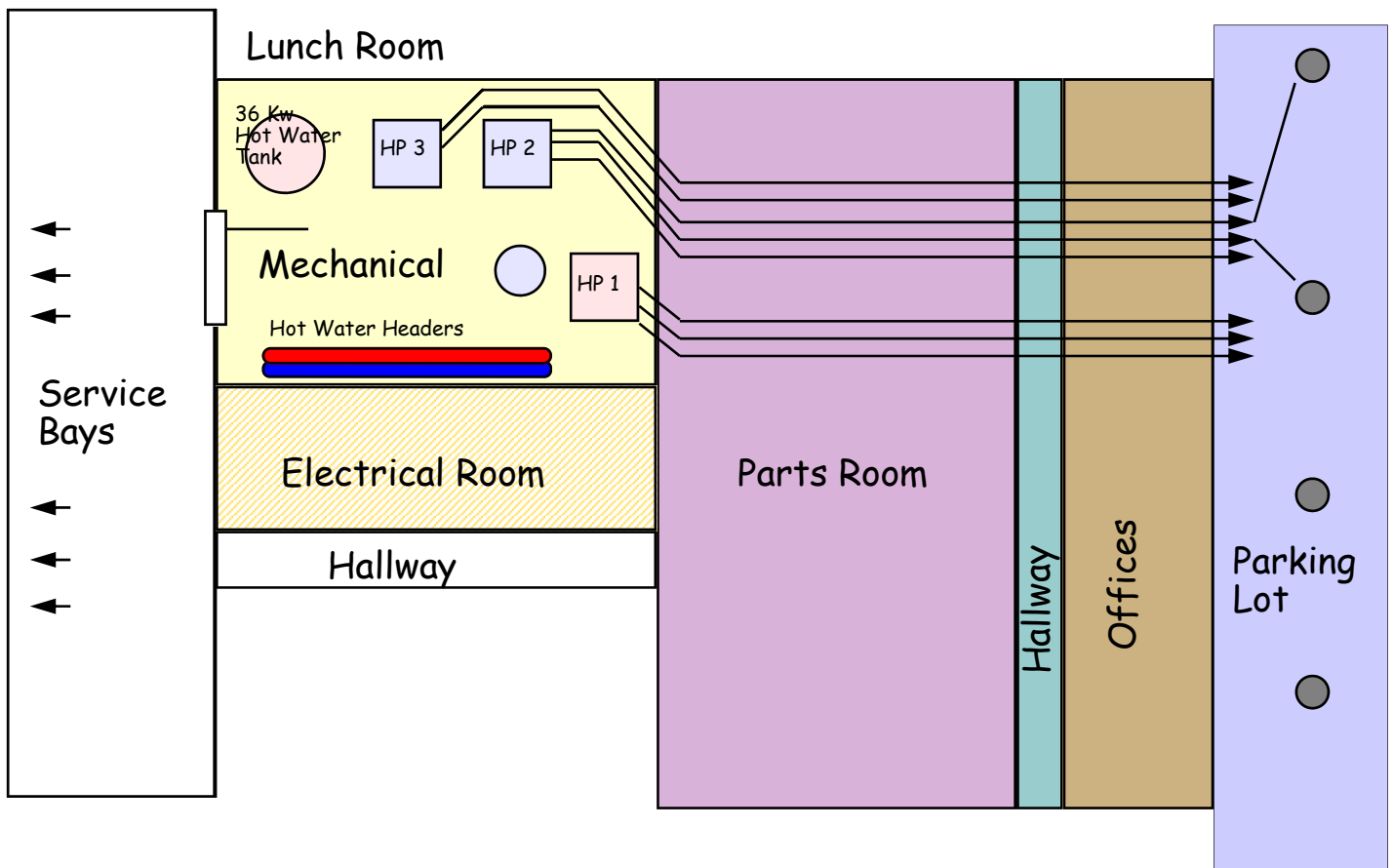
3. Air conditioning duct.

2. Waste oil boiler lines

4. Waste oil boiler.



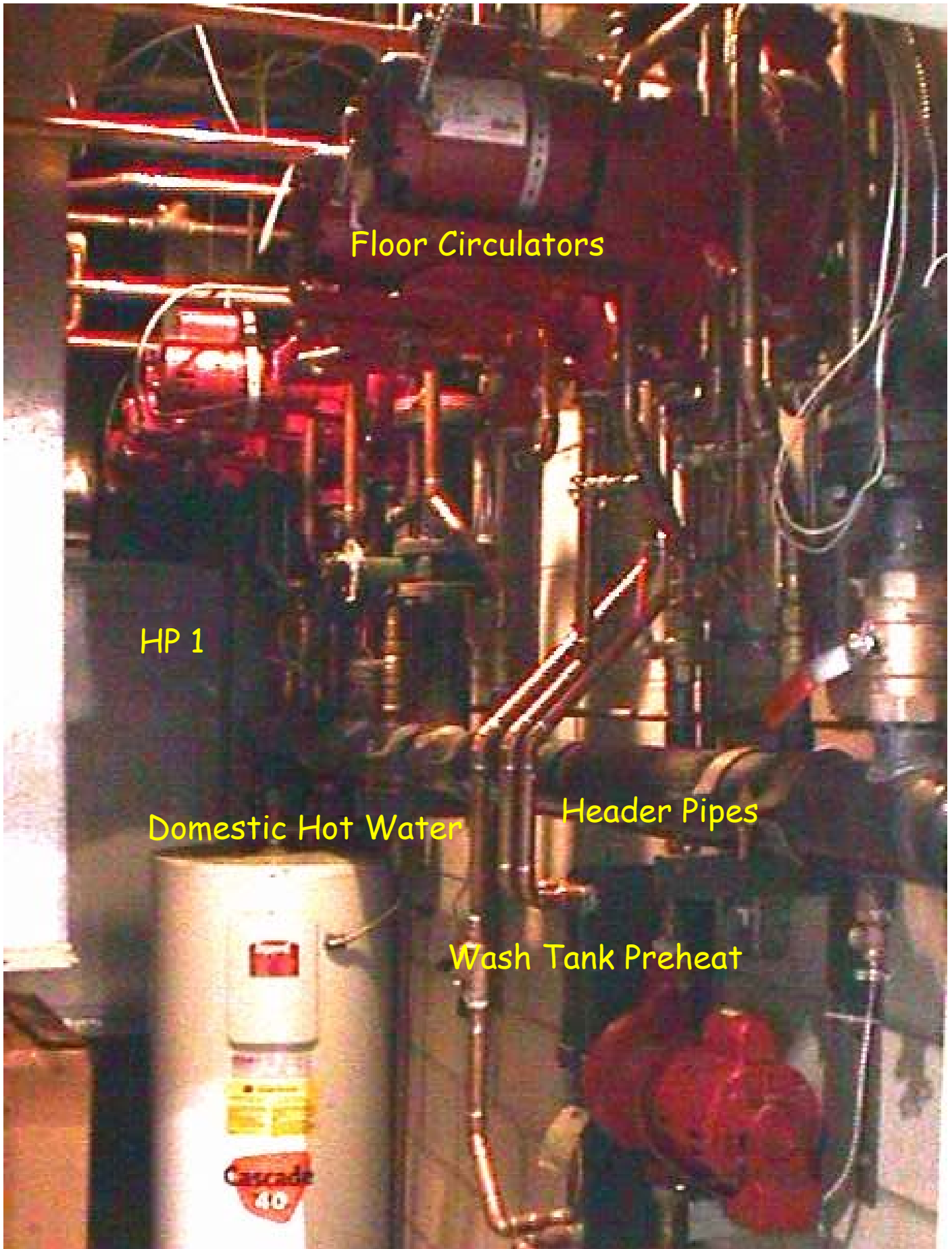
Mechanical Room Burgess Contracting Ltd. - Petitcodiac, N.B.



Heat Pump Equipment Installed

(3) DX 6 ton Dual-Function Heat Pumps.
Produce Hot Water in Heating Mode.
Produce Cold Air in Cooling Mode.
Nominal output 65,000 Btu's each.
Stainless Brazed Plate Hot Water Exchangers
575v /3/60 voltage
18 boreholes total @ 100' each.
CFM = 2400 @ .2" esp. in cooling mode
Onboard computer controlled operation

Mechanical Room Layout Burgess Contracting Ltd. - Petitcodiac, N.B.



Floor Circulators

HP 1

Domestic Hot Water

Header Pipes

Wash Tank Preheat

Zone & Thermostat Layout Burgess Contracting . - Petitcodiac, N.B.

