

DESIGN OF GROUND SOURCE HEAT PUMPS FOR COMMERCIAL AND INSTITUTIONAL BUILDINGS

TYPICAL SCHEDULE FOR ONE-DAY SEMINAR

- 8:00 A.M.** **Introduction - Nomenclature, Overview, Applications
Ground-Coupled, Ground Water, Surface Water**
- 9:00 A.M.** **Advantages: Characteristics of Quality GSHP Installations
Disadvantages: Limitations and Lessons Learned**
- 9:45 A.M.** **Break and Discussion (or Demonstrations)**
- 10:00 A.M.** **Equipment - Water/Air Heat Pumps, Standards, Specifications,
Factors Effecting Performance, Outdoor Air Options with GSHPs**
- 11:00 A.M.** **Ground Loop Design and Equipment Selection, Ground Thermal
Properties, *GchpCalc* Software for System Design**
- Noon** **Lunch**
- 1:00 P.M.** **Ground Loop Design and Equipment Selection - Design Alternatives
for Reduced First Cost - Pipe Size/Spacing, Equipment, Hybrid
Systems, Dealing with Uncertainty and Liability**
- 2:15 P.M.** **Ground Field Layout, Installation, and Indoor Piping**
- 3:00 P.M.** **Break**
- 3:15 P.M.** **Pump Selection and Control**
- 4:00 P.M.** **Energy, Demand, Cost and Economics**
- 4:45 P.M.** **Adjourn**

NOTE: The intended audience for these seminars is HVAC design engineers. Contractors and architects that are familiar with GSHP design and installation will benefit from the seminar. Marketing representatives with only casual technical backgrounds may be not be interested in the topics addressed in this seminar.