

“TYPICAL” SCHEDULE FOR TWO-DAY SEMINAR
Design of Ground Source Heat Pumps for Commercial and Institutional Buildings

DAY ONE

- 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
- 9:50 A.M.** Break and Discussion (or Demonstrations)
- 10:10 A.M.** Equipment - Water/Air Heat Pumps, Standards, Specifications,
Factors Effecting Performance
- 11:00 A.M.** Ground Loop Design Fundamentals, Ground Thermal Properties, Loads,
Calculations, *GchpCalc* Software for System Design
- Noon** Lunch
- 1:00 P.M.** Ground Loop Design and Equipment Selection - Design Alternatives
Hybrid Systems, Dealing with Uncertainty/Liability
- 2:00 P.M.** Hands-on System Design with *GchpCalc*
- 3:00 P.M.** Break
- 3:15 P.M.** Ground Field Layout, Installation, Piping, Pump Control
- 4:45 P.M.** Adjourn

DAY TWO

- 8:00 A.M.** Loop Design with *GHPpipe*
- 9:00 A.M.** Ventilation Air and ASHRAE 62 for GSHPs
- 10:00 A.M.** Break and Discussion (or Demonstrations)
- 10:30 A.M.** Surface Water and Ground Water
- Noon** Lunch
- 1:00 P.M.** Thermal Conductivity Testing/Geological Information Sources
- 2:00 P.M.** Energy and Demand of GSHPs & Conventional HVAC Systems
- 3:00 P.M.** Economics and the Impact of Design Approach
- 4:00 P.M.** GSHP Industry Resources

NOTE: The intended audience for these seminars is HVAC design engineers. However, subject matter is appropriate for other technical personnel, such as HVAC and drilling contractors, GSHP and HVAC equipment/supply vendors, electric utility specialist, architects, and energy managers.