

# Engineer's Vault Requirements Checklist

(Standards for the Commercial Geothermal Industry)

All vaults used for commercial geothermal use should meet these minimum criteria to be considered for approval by an engineer for optimal performance and a lifetime of fail-safe service for the geothermal wellfield system.

- ✓ **Quality Assurance:** The vault shall come from the factory with the HDPE manifold mounted in place and all main and circuit piping stubbed out of vault housing. The manufacturer shall be specialized in the manufacturing of commercial geothermal vaults, have manufactured at least 200 geothermal vaults and shall have manufactured geothermal vaults for a minimum of 5 years. Proof of experience shall be required for approval.
- ✓ **Structural Integrity:** The vault shall come from the factory traffic load rated and capable of handling all traffic and service/utility equipment loads encountered regardless of the vaults location. If additional structural support (such as a concrete surface pad with manhole ring and cover) is required to meet this criterion, it must have a PE stamped design. The vault shall have a flat base that extends out to the complete width and length of the vault. This wide base will have a reinforced footing surface area that carries a load of no more than 12 lb per square inch of the installed vault's weight.
- ✓ **Buoyancy:** The weight of the vault housing itself must overcome all buoyancy forces at the installed depth. The vault must not be able to float in a flooded open vault pit during installation. If any additional vault weighting/anchoring is required to meet this criterion, it must have a PE stamped design. The design calculations will use complete saturated soil conditions.
- ✓ **Component Replacement:** All vault supply/return pipe penetrations must utilize a positive hydrostatic seal (equivalent to Link-Seal<sup>®</sup>) to allow field replacement should the pipe be damaged. Pipe cannot be heat fused (or extrusion welded) to vault structure or be secured in any fashion which promotes crack propagation in the pipe or hinders pipe replacement. All valves and gauges within the vault must be able to be replaced without any heat fusion repair required.
- ✓ **Safety/Service:** The vault shall have switched lighting, switched fresh air ventilation (minimum 1200 CFM), service outlet and a sump pit/pump. The vault shall have a minimum of a 30" square manway or a 34" diameter manway with an OSHA approved ladder and a tamper-resistant, non-skid cover with a gasket seal. There must be a minimum 2' wide walkway between circuits with a minimum 6' high unobstructed ceiling. All ceiling mounted lights, ventilation blower, outlets and etc. must be mounted to the side of this walkway.



## ENGINEER'S VAULT REQUIREMENTS CHECKLIST (Standards for the Commercial Geothermal Industry)

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