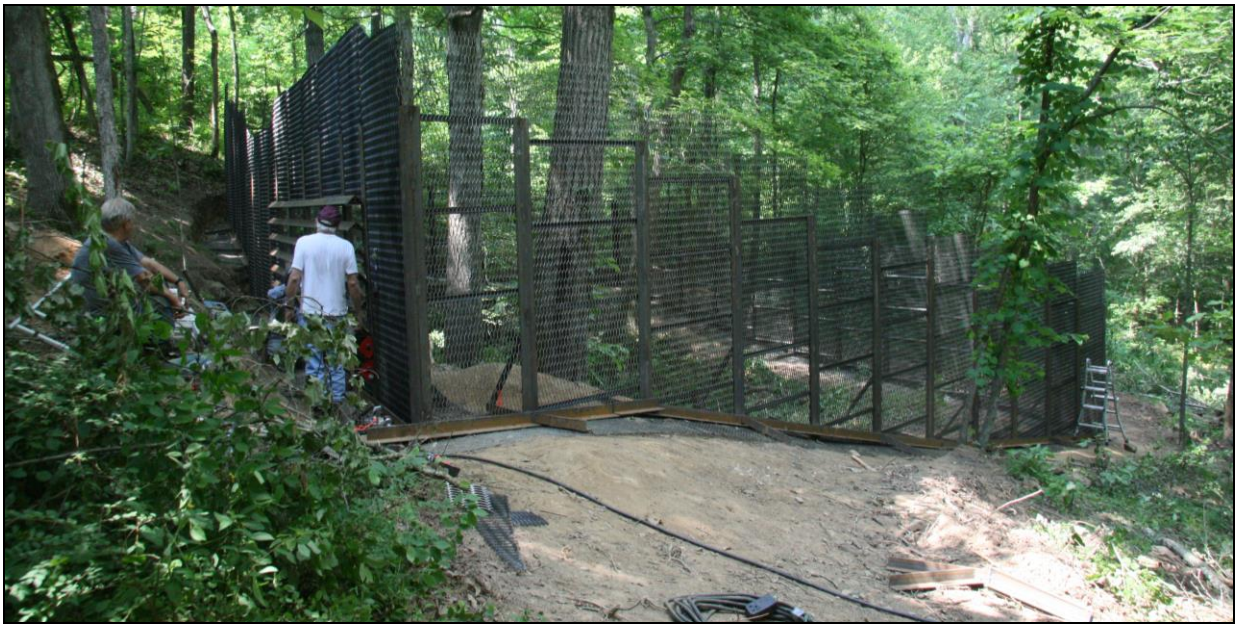
MODERN CAVE GATES AND FENCES

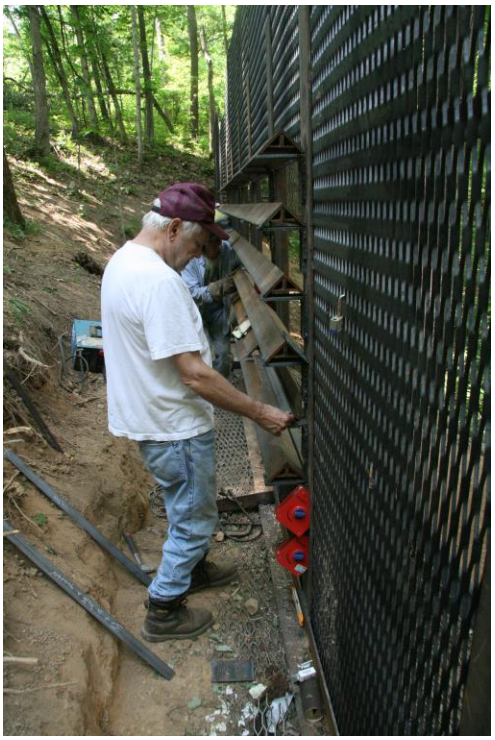
The fence design used by Kennedy Above/Under Ground LLC on gray bat maternity caves is based on industry-standard bat-friendly gate designs as developed by the American Cave Conservation Association and Bat Conservation International. These designs are widely accepted by the US Fish and Wildlife Service, National Park Service, US Forest Service, US Bureau of Land Management, The Nature Conservancy, National Speleological Society, and numerous state conservation and wildlife management agencies. This fence design (the **Powers Fence**) is one that has been installed on only three gray bat caves so far (Bellamy and Tobaccoport Saltpeter, both in Tennessee, and Key Cave in Alabama) and has been highly successful. While no gate or fence structure provides 100% security against determined trespassers, current "best practices" bat gates and fences such as the ones we build provide the best assurance of security while maintaining maximum biological transparency. It is essential that fences cave gates do not alter the biology of the cave, including temperature and humidity regimes; air, water, animal, and nutrient flow; or the ingress or egress of bats. These are the reasons bats chose those specific caves in the first place, and not others.

All of our gate and fence designs have a "removable bar" entry point (see attached schematic), and are lockable with a simple padlock. When the removable bar is unlocked and removed, the resulting opening will easily accommodate a researcher, or if necessary, a rescue litter (such as a Ferno-Washington) with patient, in case of an unfortunate accident. Gates are constructed primarily of 4″x4″x⅜″ angle iron, and securely anchored to bedrock with 1″ steel pins. Fences, and gates built on loose sediments, have a heavy expanded raised steel grating "skirt" below to prevent potential trespassers from tunneling beneath.

The **Powers Fence** design is a perimeter fence surrounding the cave entrance(s), with maximum distance at the "downhill" side of the entrance to provide maximum flight space. Expanded metal panels are welded to an angle-iron "sill" which roughly approximates an ovoid at 6–10 meters from the maximum dimensions of the cave entrance(s). These panels are also welded to, and supported by doubled 4″ angle iron "columns" which are then supported by angle iron "footers" and braces. The panels are further supported and held in place by 1½″ angle iron stays welded between the columns. A small section of a **Basic Gate** is included in one of the fence sections in order to allow authorized human access via a lockable, removable bar. The spacing of the bars is critical to allow access of small bats and other small mammals, but not wide enough to allow human entry. The bars are constructed of 4″ angle iron oriented apex up to maximize the airflow through the gate. Bars are oriented horizontally, with vertical supports spaced widely.

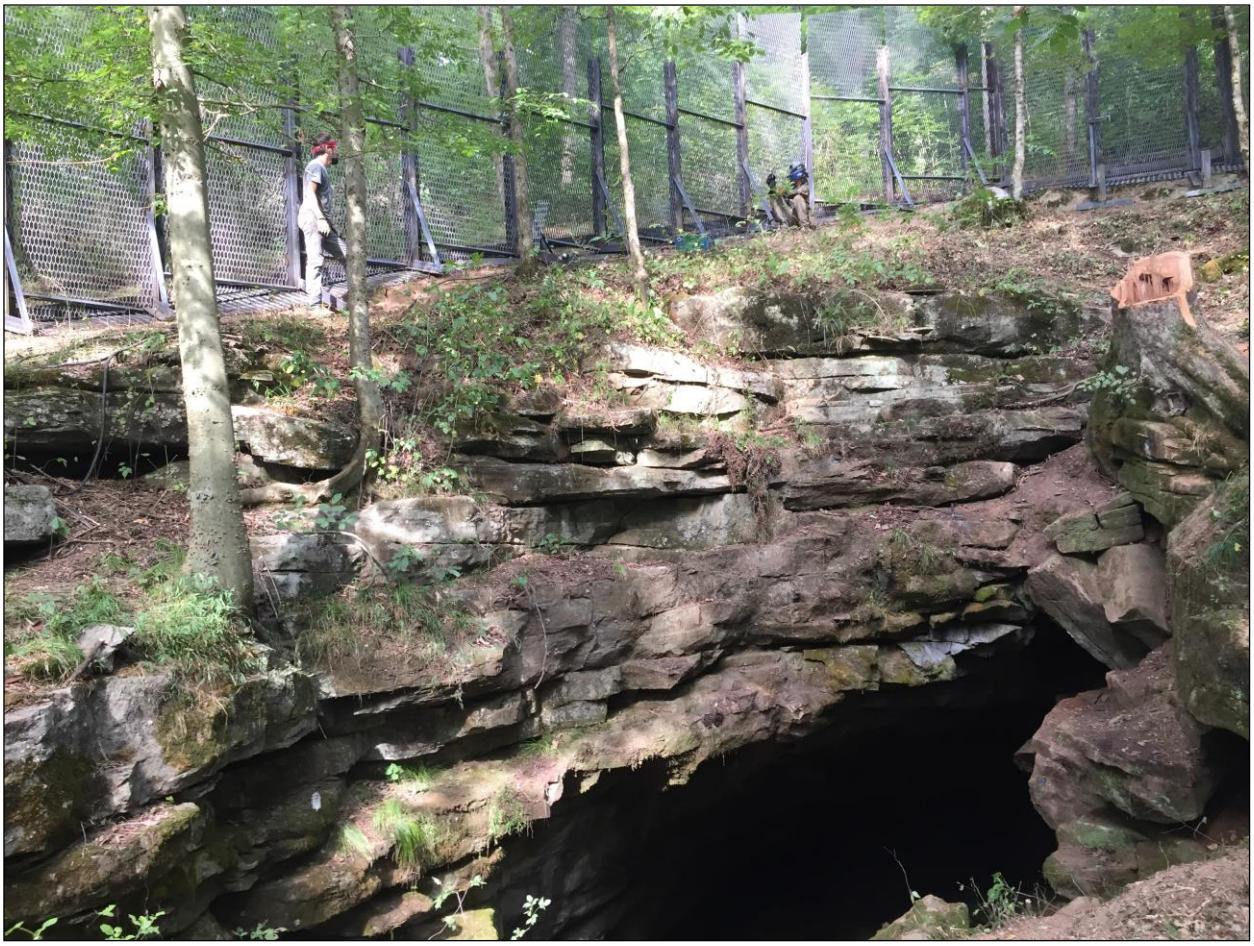


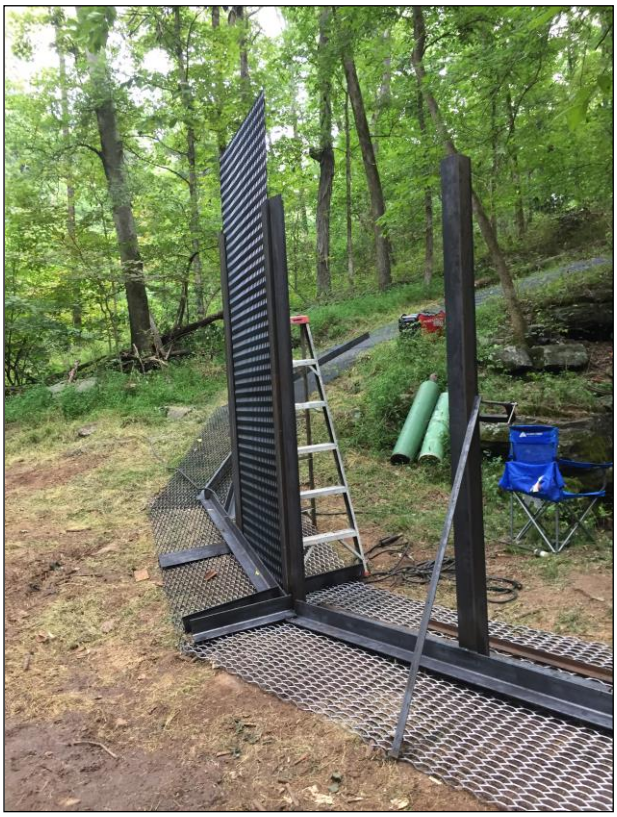
Powers Fence being constructed around Bellamy Cave, Montgomery County, Tennessee. The late Mastergater Roy Powers is in the front left of the photo, in white T-shirt. Photo by Jim Kennedy.

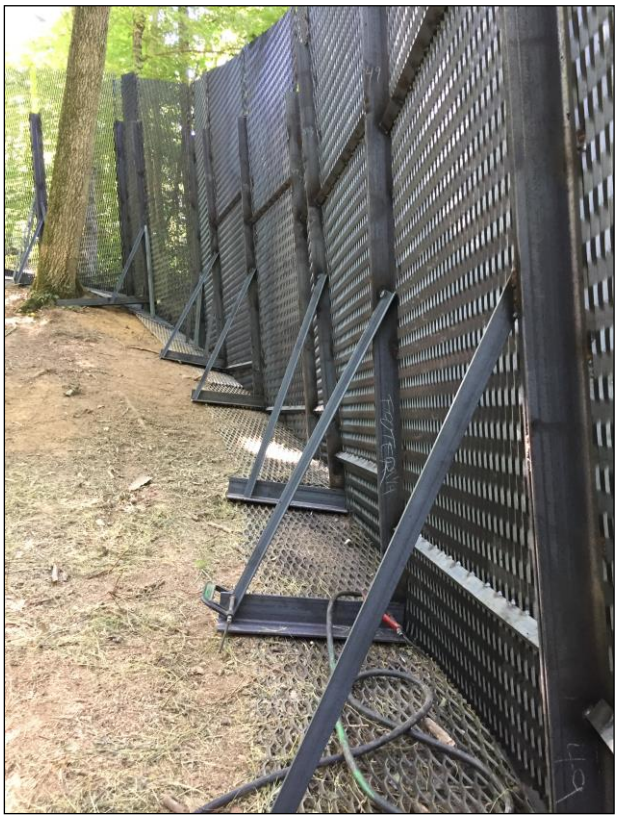


Left: Roy Powers measuring for the removable bar at the Basic Gate section of the Powers Fence. Right: Welder Jerry Fant fills in the top gaps above the columns. Both photos at Bellamy Cave, by Jim Kennedy.

Below: *Powers Fence nearing completion at Tobaccoport Saltpeter Cave, Stewart County, Tennessee. Photo by Jim Kennedy.*







Left and Right: Powers Fence at Tobaccoport Saltpeter Cave during earlier stages of construction, showing details of expanded metal skirting, support footers, inside braces, and horizontal stays. Photos by Jim Kennedy.

For more information on the Powers Fence or other styles of bat-friendly cave and mine gates, contact:

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