Case study

Building Solar Safely on a Superfund Site

Terrasmart pairs ground screw innovation with in-house safety expertise to transform a complex brownfield into productive clean energy

Background



The Acton Solar Project now produces 7.1 MW solar on a former Superfund site for The Bay State.

Built on the footprint of a former chemical manufacturing plant in Acton, Massachusetts, the Acton Solar Project represents a landmark achievement in brownfield site redevelopment.

Designated as an EPA Superfund site, the property had extensive soil contamination, including buried volatile organic compounds (VOCs) and asbestos, and was long considered unsuitable for traditional commercial construction.

Pre-construction analysis found several areas of concern: risk mitigation, regulatory compliance, schedule control, and budget predictability on such a complex site. The site's EPC, **DEI**, seemed to be facing a David vs. Goliath battle.

Juggling six independent regulators and tasked with contingency planning for potential setbacks, unpredictable and potentially toxic subsurface conditions, DEI contracted **Terrasmart** as an expert in overcoming significant construction constraints while managing strict, enhanced environmental health and safety (EHS) protocols.

By deploying its specialized ground screw foundation technology designed to drill directly through subterranean obstacles with minimal soil displacement, Terrasmart was able to perform foundation installations, ensuring solid structural stability without compromising the environmental integrity of the site.

Today, the site hosts a productive 7.1 MW solar and 4 MW battery storage facility to support the clean energy and grid resilience goals for Massachusetts.



Pre-installation photo of the Acton site.

Challenges

The Acton brownsite's legacy left behind subterranean concrete slabs, buried asphalt, dense sands and gravel, and the constant potential of exposing the site to buried contaminants. While another EPC customer handled racking and modules, Terrasmart handled ground screw and leg installations.

Standard pile-driving techniques invited extreme risk, including refusal, post-bending, and uncontrolled ground vibrations that could expose the project to further toxic contamination. A contamination event could require renewed periods of remediation or risk of jeopardizing the health of the project altogether.

Terrasmart deployed its ground screw foundation system, utilizing proprietary drills and specialized Terrasmart Screw Machines (TSMs) to drill directly through subsurface concrete and asphalt layers without causing mass soil displacement.

Unlike larger, heavier equipment (such as GRTs) that carry higher risk on uneven ground or concrete, compact machines provide exceptional agility across minor site undulations (i.e., reducing the risk of equipment sliding), accelerating installation timelines while preserving soil stability.

Attention to detail was key in minimizing exposure risk. One example is the precise staking and tight surveying tolerances that ensured exact screw placement.

The team also protected against long-term environmental factors, consulting and executing the recommendations of corrosion experts to prevent corrosion caused by rain runoff from landscape-oriented panels.

Solutions

Risk prevention starts with proactive EHS governance and specialized training.

Operating on contaminated land where soil reports had previously found benzene, formaldehyde, and asbestos, EHS protocols required planning and execution beyond standard compliance levels. Terrasmart differentiates itself through an in-house employment model and dedicated EHS personnel, contrasting with competitors who routinely subcontract field operations.

Such heightened EHS compliance required the crew to wear PPE tailored to the specific site conditions and demands to ensure their personal safety.

Moreover, every Terrasmart team member on site held a minimum of 24-hour OSHA HAZWOPER certification for hazardous waste handling, with field supervisors trained to 40 hours.

During drilling, crews conducted constant VOC testing using photoionization detector (PID) meters. When VOC readings spiked from baseline levels (25–50 ppm) to over 2,000 ppm, work was immediately halted for safety re-evaluation.

A PID is a portable gas tool that measures VOCs and other hazardous vapors. Here, the PID readout shows that VOCs are under 330 ppm, and the crew can safely continue work.



Areas discovered to contain asbestos were roped off and completely remediated before installation resumed. Finally, to prevent cross-site or off-site contamination, crews enforced strict equipment cleaning protocols and utilized on-site aggregate production.

Results

By combining internal equipment ownership, direct labor execution with rigid environmental safety controls, Terrasmart provided end-to-end quality assurance and control, turning one of the Northeast's most challenging brownfield sites into a blueprint for successful solar redevelopment.

The implementation of continuous real-time gas and environmental monitoring on this site produced valuable reference data for Terrasmart's future brownfield bids and execution plans.

Today, the Acton Solar Project exists as an innovative model that even the most complex brownfield sites can be redeveloped safely, on schedule, and within budget.

For decades, the brownfield chemical plant at Acton was a blight on the community as the site was remediated from many years of severe environmental contamination. Now, the site has been transformed into a productive 7.1 MW solar and 4 MW battery storage facility for The Bay State.

Learn more about Terrasmart's installation expertise.

