The Best Fence for Utility Scale Solar Farms

by John Payne

PROTECT YOUR INVESTMENT WITH THE BEST SOLAR FARM FENCE

Whether your goal is to prevent damage to solar panel units, substations, or other necessary structures on the property, secure the perimeter from tampering or theft, exclude wildlife that can damage these panels, or help reduce accidents from happening, and decrease repair costs, our solar farm fence solutions and expertise set the standard for value, durability, and reliability.

High-Tensile, Fixed-Knot Fence

Oftentimes, solar panels are surrounded by chain-link fences, but that's not as aesthetic or effective, especially in rural areas. Also, it isn't as effective as high-tensile, fixed-knot fencing material and design.

The right fence should check several boxes, including strength. This option is more resistant to human tampering, livestock impacts, and wildlife pressure. Humans can cut fences, and larger animals can apply hundreds, if not thousands, of pounds of pressure. High-tensile, fixed-knot fencing can take a beating and is better at staying intact.

Let's dive deeper and discuss high-tensile, fixed-knot materials, performance, benefits, costs, specifications, and additional options.

PROTECT YOUR INVESTMENT WITH THE BEST SOLAR FARM FENCE

High-Tensile, Fixed-Knot Fence Material

High-tensile, woven-wire steel mesh with a "fixed knot" is the preferred material for its strength, safety, and resistance to breach.

The high-tensile, fixed-knot fence is the next-generation form of the old field fence. It consists of interconnected vertical and horizontal wires forming squares and rectangles of overlapping and knotted wires. It differs from field fencing in its strength, longevity, performance, and available patterns.

Performance Of High-Tensile, Fixed-Knot Fences

When selecting high-tensile, fixed-knot wire mesh for high game fences, the five factors that make a performance difference are:

1. **Fixed-Knot Design** – Fixed-knot wires are wrapped around the line and stay wires for superior vertical strength, which allows for increased post spacing and excellent resistance to animal impact. The fixed-knot union holds tight under pressure, resists movement, keeps its form, and maintains its ability to do its job.
2. **High-Tensile Wire** – Professional grade 12.5 gauge high-tensile wire is 175% or 2.75 times stronger than traditional low carbon 12.5 gauge field fence, providing a breaking strength of 1,380 lbs. vs. 500 lbs. per single wire.
3. **Coating Type** – Minimum ASTM Class 3 galvanized coating is three times more galvanization than the typical Class 1 product. Using fixed-knot mesh for solar farm fences creates a longer-lasting fence that performs for up to 3 times longer. These fence meshes are available with a Class 40 Zinc-Aluminum coating. This zinc coating is the highest degree of protection available for high-tensile steel mesh.
4. **V-Crimps** – Deep crimps manufactured in the horizontal wires are installed with significant tension so they can resist forces exerted on the fence in a spring-like fashion.
5. **Mesh Spacing** – Fixed-knot, high-tensile mesh designs are available in a 3 to 12-inch vertical stay wire spacing with 3-inch minimum and 5-inch maximum horizontal wires in the two bottom courses.

BENEFITS OF HIGH-TENSILE, FIXED-KNOT SOLAR FENCING

Benefits

- Best Value – heavy-duty, Class 3 galvanized wire contributes to longevity & durability.
- A 20-year manufacturer's warranty protects the investment.
- Fixed-knot solar farm fences can last three times longer than traditional low-tensile fencing material.
- This type of fencing offers the highest strength-to-cost ratio.
- Vertical stay wires on 6-inch or tighter centers give the fence high resistance to penetration.
- Posts can be spaced up to 20 feet apart for greater economy while retaining strength.
- Construction stays tight with less than 1% elongation over the service life of the fence.
- Deep crimping creates a memory for optimal flexibility to absorb impact and climate change.
- Properly installed, the high-tensile fencing will not sag over time.
- High-tensile, fixed-knot solar farm fencing is essentially maintenance-free, so landowners spend less time worrying about the integrity and durability of the fence.

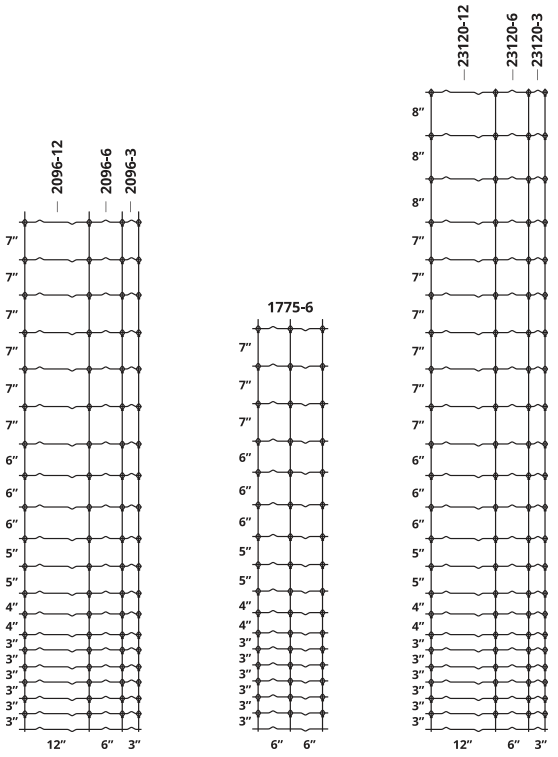
Selection of the best fence for solar array farms often comes down to a value equation. High-tensile, fixed-knot Class 3 fences provide significant value, as detailed above. Over the long term, these superior fencing materials cost significantly less to install and maintain than Class 1 barbed wire fences or hinged joint field fences. The initial cost to install fixed-knot fencing is virtually the same as barbed wire because of the 20-foot post spacing, which requires fewer intermediate posts. Also, this fence material comes in rolls of 330 feet or more, which makes it easier to install long runs versus installing wires individually. After installation, the fixed-knot fence requires little maintenance, which translates into significant savings of time and money. With a service life of 2-3 times that of a typical field fence, the high-tensile, fixed-knot fence is a no-brainer!
For a full breakdown of utility scale solar farm fence cost, review this article.

Specifications for Solar Farm Fences

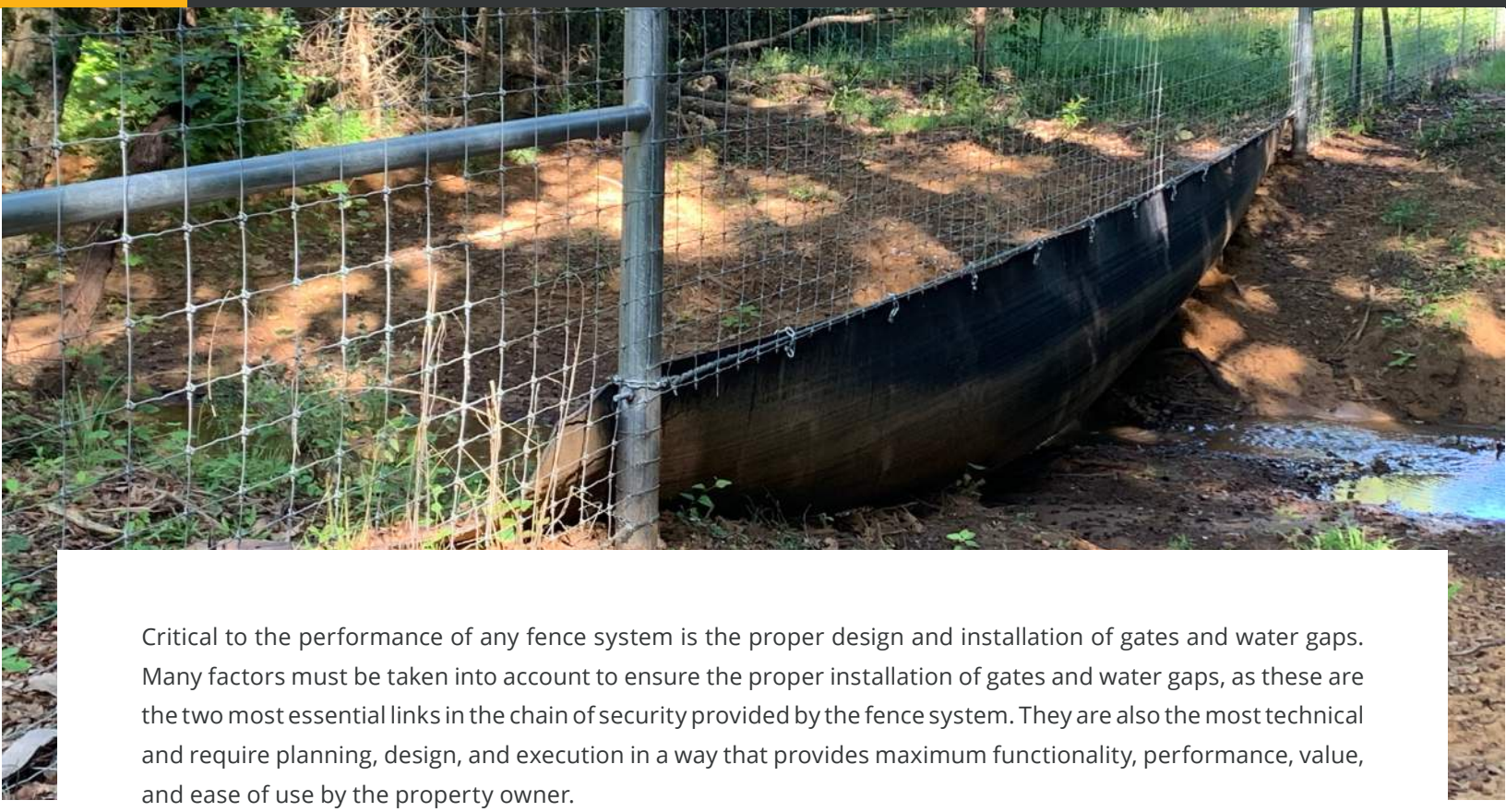
Fixed-knot wire comes in a wide variety of heights and wire spacing. Height is an important aspect of selecting the proper fence material. For the purpose of protecting solar array farms, a 6-foot, high-tensile fence — 1775-6 with barbed arms on top and three strands of barbed wire is sufficient. This will keep humans, hogs, and other animals out. The high-tensile is good for the hogs, and the barbed wire atop is good for two-legged critters.

Spacing is a very important part of choosing the right fence, too. The space between wires should be small enough that it prevents unwanted animals from breaching the fence. That said, it needs to be large enough that smaller animals — such as mice, rabbits, and squirrels — can get out if they choose. Of course, the 1775-6 is 6 feet tall and set on 6-inch-wide fence mesh pattern spacings (or sections) within the fence. At the bottom, these are 3 inches tall and gradually increase to 4, 5, 6, and then 7 inches at the top of the fence.

The main choice to consider is the spacing between the wires, both vertically and horizontally. For best results, for solar array protection, the typical specification is 6-foot-high, high-tensile fence (1775-6).



GATES & WATER GAPS FOR SOLAR FARM FENCES



Critical to the performance of any fence system is the proper design and installation of gates and water gaps. Many factors must be taken into account to ensure the proper installation of gates and water gaps, as these are the two most essential links in the chain of security provided by the fence system. They are also the most technical and require planning, design, and execution in a way that provides maximum functionality, performance, value, and ease of use by the property owner.

Considerations for gates are soil type, anchoring system, and stabilization to ensure long-term performance, swing direction, ground elevations, latch system, automation options, ground clearance, maximum open space to match containment or protection criteria, materials, durability, aesthetics, and budget for a net value equation that works for the project goals.

Considerations for water gaps are watershed analysis, stormwater management, standards for land grading, flow rates, debris potential, length and height, maximum flow depth, historical flow data, protection and containment criteria, accessibility, protection criteria, durability, ease of maintenance, ability to conform to changes in the creek or watershed bottom over time, proper fitment, supports structural integrity, longevity, and budget for an optimal solution.

The functionality of these components of a solar farm fence is vital to the fence's long-term performance, which keeps operating costs low over time and reduces the net cost of the investment. It's the "Done Right the First Time" philosophy that typically costs a little more upfront to save countless dollars and headaches in the future and takes the concerns of fencing out of the equation for more time spent on enjoying your exotic game.

The professionals at Tejas Ranch & Game Fence use proven methods acquired through years of experience in the business to ensure a good fit and a long-lasting solution with the pride and workmanship that guarantees top performance in the ranch fence world.

SUPPORT POSTS AND CORNERS

Having been around farms and ranches, you have seen all types of fence support systems, also known as bracing, from railroad ties and cedar posts to trees and rock piles. A good rule of thumb to remember when choosing materials and quality installation for your next solar farm fence is that the structural support system has set the foundation for a reliable herd management tool for many decades.

Fence Brace Material

The most reliable fence bracing materials for farms and ranches are made from galvanized pipe. This post material is used to build an H-brace's corners, pull posts, and line posts, which are the true structures of the fence system that hold the tension of the high-tensile, fixed-knot wire mesh fence to maintain its integrity to perform as a reliable barrier. This material is an ideal match of strength, long service life due to its corrosion protective layer, and relatively low cost considering the near maintenance-free 25+ year service life.

Structural Brace Construction

The fundamental bracing method of having a structural anchor at each terminal and turn point on a fence has been around for decades, but quality ranch fence contractors have perfected it. On a typical H-brace or corner brace, a 3" galvanized post is driven a minimum of 5.5 to 7 feet into the ground, depending on the soil type and density. It is essential to drive the tension-bearing post down to gain ultimate resistance from the soil. Soil types and compaction rates vary, and corresponding construction methods must, too. Using rule-of-thumb engineering and years of experience, the professionals at Tejas are adept at setting these critical anchor points to perform for the life of the fence, guaranteed.

Once the posts are set, horizontal cross members made of galvanized pipe are welded between the vertical posts. A diagonal kicker brace is attached to the structure and then to a deadman for maximum strength. The pipe welding should be a complete 360 degrees and, when done right, has full penetration of the base metals to create the rigidity to support the 2-3,000 pound tension of the high-tensile, fixed-knot fence without moving for the life of the fence. This construction practice provides a heavy-duty anchoring point for all the tension that will be applied to your solar farm fence over the years.

Fence Fabric Support Posts

With a fixed-knot wire mesh fence, we recommend T-post spacing on 20-foot centers. This distance can be slightly more or less depending on several variables, including topography, animal traffic, and soil types. A fixed-knot fence's rigidity and vertical stays allow it to perform exceptionally well with nominal 20-foot post spacings. The savings of 20-foot intervals offset the high-tensile wire's increased cost and result in a much stronger and longer-lasting product. T-posts and Line Posts can be spaced on tighter intervals in high-pressure areas or with exotics that put more pressure on a fence.

Additional fence wire support is added through the use of line posts, which are single pieces of pipe driven into the ground along the fence line at 100' to 120' intervals and take the place of T-posts at those locations. The primary purpose of these line posts is to give the fence fabric good lateral stability on long runs between the primary bracing structure.

ADDITIONAL OPTIONS

Other features may be required depending on the project goals and can be added to customize fence solutions for almost any environment or need.

Visual Impact

The visual impact of utility scale solar facilities can be significantly minimized with effective site block screening and buffering. Rural aesthetics is often a top concern of neighbors and municipalities when establishing a solar farm operation. Buffering or screening may be necessary along main roads, public right-of-ways, highways, or other.

Three Options for Reducing Visual Impact

1. **Screening** - Commonly referred to as wind screen, a commercial grade screening material can be applied to the high fence with little visibility. At Tejas, we refer to this as "site block."
2. **Black Powder Coating** - For a fence that blends in with the environment and does not reflect the light like the traditional galvanized pipe, a black powder coating can be added to the fence materials during production to create a desired finish with long-lasting durability.
3. **Buffering** - Berms can provide an effective visual screen, particularly if combined with landscaping and vegetation.

Predator-Control Barriers

Predator-control options consist of a steel mesh apron fence at the base of the fixed-knot fence to eliminate digging, tunneling, and wallowing or electric wire barriers at the base and/or center and top of the fence.

Barbed wire can be placed at the top of the fence to deter climbing and jumping.

Electric Fences

An electric fence wire outside of the fence at approximately 6 inches above the ground has considerably reduced the number of breaches under a fence. An electric wire is typically used to prevent coyotes or dogs from digging a hole under the fence.

Zinc-Aluminum Coating

For highly corrosive environments, such as coastal areas where salt-laden air rust fences more quickly, we offer a zinc-aluminum coating that is highly resistant to corrosion. This Class 40 zinc-aluminum coating provides the highest degree of protection available for high-tensile steel mesh.

WHY CHOOSE TEJAS?

Choosing the right commercial contractor to build the best fence for utility scale solar farms.

The highly skilled team of fencing innovators, designers, and construction professionals at Tejas are dedicated to excellence in every job. They work closely with clients to determine the best design and construction for their unique needs, using only the highest quality fencing materials. Their installation teams are meticulous and accomplished experts in every way. Tejas strives to exceed clients' high expectations to create sustainable value in all solutions by focusing on careful consultation and design, top-quality materials, and uncompromising installation methods. Choose Tejas for the best fence for a solar array farm on your property.

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