

CASE STUDY

Agricultural Application of Greencells: Fibertex Greencell Benefits in water conveyance open channels



GREENCELLS

Stitched Coated Polypropylene (PP) Woven Geotextile Cellular Confinement System (Geocell)

CUSTOMER

Saruji

END APPLICATION

Lined water conveyance canal for agricultural use.

CUSTOMER PROBLEM

Canals are lifelines for many farms, acting as an essential part of irrigation systems in drier regions. Traditional canal construction utilizing unlined canals or conventional formwork for concrete lining suffers from several drawbacks, including long construction times, susceptibility to erosion, and ongoing maintenance requirements.

FIBERTEX SOLUTION

The project adopted Fibertex Greencell as a novel approach for constructing a concrete-lined canal. Greencell served a dual purpose:

- **In-Situ Shuttering:** Greencell acted as a flexible and efficient formwork system, eliminating the need for traditional formwork panels. This significantly reduced construction time and labor costs associated with formwork setup and removal.



CASE STUDY

- **Mechanically Stabilized Interlayer (MSI):** Once filled with concrete, the Greencell's cellular structure created an MSI within the canal lining. This enhanced the concrete's overall shear strength, enabling the canal to resist higher water flow forces and minimize erosion potential on the bed and slopes.

Benefits:

- **Reduced Construction Time and Costs:** Greencell's role as in-situ shuttering streamlined the construction process, leading to faster project completion and lower labor expenses.
- **Enhanced Durability and Reduced Erosion:** The Greencell-reinforced concrete lining provided superior strength and erosion resistance, ensuring the canal's long-term stability and functionality.
- **Reduced Maintenance Needs:** By minimizing soil migration and erosion, Greencell significantly decreased the need for ongoing maintenance activities compared to traditional unlined canals. This translates to substantial cost savings over the canal's lifespan.

Additional Advantages:

- **Improved Channel Stability:** The cellular confinement of Greencell promoted a stable channel bed and side slopes, reducing the likelihood of irregularities or failures due to erosion.
- **Design Flexibility:** Greencell's modular design allowed for customization to meet the specific requirements of the canal project.

FIBERTEX PRODUCT DESCRIPTION

Fibertex Greencell is a three-dimensional cellular confinement system comprised of UV-stabilized polypropylene. The base material is a woven slit film tape, specifically designed for strength and durability in exposed environments. The Greencell features a 200mm x 200mm square cell pattern with customizable heights of 75mm, 100mm, or 150mm to suit project requirements. For ease of installation, standard panels come in dimensions of 3 meters by 10 meters.

It's important to note that Fibertex Greencell selection and design for open channels should be based on specific project requirements, including flow characteristics, channel geometry, and soil properties. Consulting with geotechnical engineers experienced in Fibertex Greencell applications is recommended to ensure optimal performance.

