

CICFS Micro-Rebar Solutions

HELIX® MICRO REBAR

What is Helix®?

Helix® is a short twisted steel 'micro bar' used as a structural replacement for conventional steel reinforcing. Due to its unique shape and resulting behaviour, Helix® can replace up to 100% of traditional steel reinforcing, while improving the shear strength and durability of concrete.

The image on the right shows the size of each Helix® micro rebar: just one inch long with a square cross section, the distance from one face to the other only .016" (.4mm). But there's a big difference between Helix® and other fibers: Helix® is **TWISTED**, with five full twists along the 1" length.



How does Helix® work?

The secret of Helix® is the **TWISTED** square profile. Similar to a cork screw in a wine bottle stopper, the only way Helix® can be removed from the concrete is for it to be twisted out. The energy required to untwist Helix® matches very closely to the energy required to pull deformed rebar through concrete.

This sets Helix® apart from other fibers which rely solely on friction to resist pull-out. And it is this 'twisting' behaviour which allows Helix® to replace conventional steel reinforcement in a wide range of applications.

A 'medium' dosage of Helix® is about 15 pounds per cubic yard which means **170,000** micro bars dispersed throughout the concrete. That's a lot of 'untwisting' tensile strength which typically provides equivalent bending moment capacity, higher shear strength and better durability than conventional reinforcing.



Authorized dealer for:

HELIX™

**CARIBBEAN
ICF
SOLUTIONS
CICFS, LLC**
Providing Green Solutions for your future

CICFS Micro-Rebar Solutions

Helix, simply put, is a replacement for rebar.

In any application, from structural foundations, to slabs, to suspended structural concrete, to paving, Helix will increase the strength and durability of concrete.



*Replacing rebar or mesh with Helix has many **quantifiable** advantages:*

Advantages

- Improved crack resistance
- Increased durability
- Improved shear strength

In short, Helix is a better way to reinforce concrete.

Authorized dealer for:

HELIX™



Providing Green Solutions for your future

CICFS Micro-Rebar Solutions

ADVANTAGES



Cost Effective

As Helix® eliminates the labor to install conventional steel reinforcement, the forming contractor saves up to 30%.

Faster

As Helix® eliminates the labor to install conventional steel reinforcement, construction time is reduced dramatically.

Eliminates Steel Placement Errors

With Helix® the reinforcement is 'poured' into the concrete, thereby eliminating problems associated with placement errors.

Improved Worker Safety

Rebar is very heavy and difficult to carry, resulting in multiple back injuries. Ends of the cut steel are razor sharp and can lead to injuries. Impalement of body parts can also occur with rebar. Helix® eliminates all of these injuries as the reinforcing is 'poured' with the concrete rather than placed by hand in advance.

Greener

Using Helix® increases the sustainability of a structure. Helix® is manufactured from up to 50% recycled steel, lowers the embodied energy of the reinforcement and can contribute LEED® points.

Improved Rust Resistance

Helix® is electroplated with zinc and therefore resists rust three times longer than conventional uncoated steel reinforcement.

Eliminates Dominant Cracks

Helix® has a very short development length and therefore starts working at the micro-crack level, well before a dominant crack occurs. As the loads are redistributed by micro-cracks, this prevents the formation of a single dominant crack in the concrete.

Authorized dealer for:

HELIX™



CICFS Micro-Rebar Solutions

Determining the Helix® Dosage

To determine the correct dosage:

1. Send CICFS, LLC your concrete structural drawings, including rebar schedule;
2. CICFS Engineering team in close collaboration with Helix® then determines the required Helix® dosage to provide equivalent structural performance to the rebar schedule;
3. If you are planning to do an ICF Project we strongly recommend that you use the CICFS Structural Design services to ensure that your structural design is optimized for the Quad-Lock ICF Building system and Helix use.

Authorized dealer for:

HELIX™

Please send structural plans to: estimates@cicfsllc.com



Top 10 Reasons: To Design with Helix Micro Rebar vs. Rebar/Mesh

1. Helix Eliminates Placing Errors.

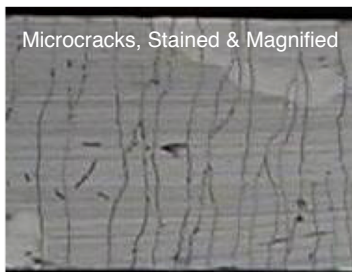
Helix avoids placement errors since it is distributed throughout the concrete matrix. Traditional reinforcement's effective strength is decreased by up to 50% when misplaced. Placing chairs, and their potential for weakening the concrete, are also eliminated.

2. Helix Provides a 40% Plus Stronger Concrete Section.

Helix is a multidirectional reinforcement that increases shear strength and decreases the need for stirrups.

3. Helix Allows the Concrete to Absorb 200% Plus More Energy.

Helix adds durability and impact resistance to the concrete which is excellent for heavy loads and seismic events.



4. Helix has Excellent Crack Control Properties.

Helix is designed to keep cracks tight and short when they develop allowing the concrete to micro crack but not develop a large, dominate crack.

5. Helix is a Safer, Discontinuous Reinforcement System.

Helix does not allow for a complete failure of the system due to corrosion; unlike traditional reinforcement which is continuous and electrically connected.

6. Helix Helps Increase Worksite Safety.

Helix reduces injuries due to cuts (placing), strains (lifting) and tripping/falling (maneuvering through the grid) traditionally associated with rebar/mesh.

7. Helix is Electroplated with Zinc.

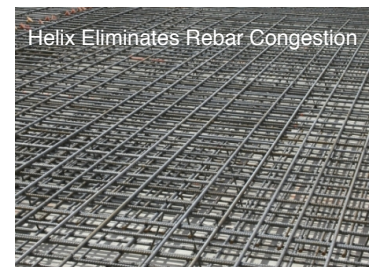
Helix has been tested in de-icing agents to resist rusting 3 times longer than standard rebar/mesh that has no coating.

8. Helix Significantly Reduces Construction Time.

Helix reduces construction time by eliminating laying, tying, and inspections and in most cases can eliminate the need for pumping and void development in highly congested steel locations.

9. Helix Reduces Reinforcing Costs by at Least 20%.

Helix eliminates the labor associated with rebar/mesh placement along with reduction of scrap, chairs and overlap splicing steel.



10. Helix Can Help Achieve LEED Goals.

Helix is made from 50% recycled steel and less overall weight of steel is used thus the emissions of trucks, forklifts and cranes are greatly reduced.