Fasten Rebar Without Wire Or Welding? – How?

By Todd Monahan

Many precasters don't realize there are alternatives to fastening rebar with wire ties or welding. You actually have the option of fastening rebar with polycarbonate clip connectors, and there are good reasons to choose this option. In fact, clip connecting, rather than tying or welding, can be the better choice.

What Is Rebar Clip Connecting?

One specific example, the Kodi Klip Connecting System, uses lightweight air tools to affix non-metallic, molded polycarbonate clips (called Kodi Klips) to any cross, parallel, or vertical rebar joints, or rebar to strand. The clips provide a four-point rigid grip that guarantees a tight, perfect connection every time. The Made in America (MIA) clips use recycled polycarbonate that won't crack, break, deform, rust or degrade, and they won't scratch or damage epoxy-coated rebar or fiberglass reinforce-ment either. Finally, each size is brightly colored to make them easy to distinguish and inspect.

When Should You Choose Clip Connecting?

• Anytime lack of strength or rigidity could be an issue

In many facilities, cages are built in one area of the plant and then moved to the pour location. Often, unless welded, the rebar cages will rack or twist, requiring additional time to be spent at the form to readjust (or completely rebuild) the cage. Also, many precasters find it necessary to add "sacrificial rebar" as diagonal stiffeners – an added cost that can be eliminated when using clips.

• For a repetitive rebar structure building process, eg, making mats

Some types of non-metallic rebar fasteners enable you build directly on the ground without the rebar being lifted. Another benefit is being able to build your first mat or layer with a skilled worker and proper measurements that will result in a jig for building the remaining mats or layers by less skilled workers. Further, because the rebar can be connected directly on a surface, there is no need to add dunnage material between each layer, meaning you save materials in addition to saving space and time.

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• When you need to comply with Made in America regulations

Currently American made steel and plastic-coated tie wire are difficult to obtain from any manufacturer of automated tying tools. Many states require MIA steel products with MIA certifications of the products used. There is a waiver process as well as a tracking system for these states that fall under either of two categories. 1. For Federally funded projects, the formula is 0.1% or $2,500 of the total project, whichever is larger. 2. For state funded projects (without Federal money/involvement), the formula is 75/25. 75% of all steel used must be MIA. Fortunately, in either scenario the MIA non-metallic, polycarbonate clip rebar fasteners will qualify for product use, enabling customers to free up the foreign made steel allowance for other products.

Where Should Clip Connecting Be Used?

• 90º intersections, round bar, bent bar

Typically speaking non-metallic rebar connectors are best used on 90º intersections due to the strength and 'memory' of the polycarbonate. When straight bar is combined with round bar, as with "hoops" for products like light pole bases, the clips provide enough strength to keep the light pole base cages from collapsing – eliminating pinched finger safety issues or the need for additional time and labor at the pour site for rebuild/repair tying. Another scenario in which non-metallic rebar fasteners excel is straight bar to bent bar fastening, such as with roadway barriers or septic tanks. The bend of the bar along with the straight bar creates an extremely tight connection.

• Fiberglass / basalt fiber / non-corrosive rebar options

Fiberglass or FRP rebar is a step away from steel rebar and a step toward much longer lasting concrete. Currently, concrete life is limited by the life cycle of the steel rebar inside the concrete. Introducing non-corrosive rebar options like fiberglass and basalt fiber rebar combined with non-metallic rebar connectors can replace all steel products in the concrete structure, resulting in a dramatically longer life for the concrete.

• Epoxy-coated rebar / steel rebar

The cost of plastic-coated tie wire for automated tying tools can be very high (more than double the cost of "black" wire). Given this, the non-metallic rebar connectors may be less expensive per connection than the plastic-coated tie wire, even before considering the other cost savings.

Is Clip Connecting Expensive?

Typically, these non-metallic rebar connectors are applied with a power tool. There is a cost for the tool, but it's significantly less than an automated tying tool. The price per connector is usually higher than a standard piece of tie wire but the application speed and added strength to the rebar structure quickly offset the costs of hand wire tying or automated tool wire tying. Non-metallic rebar fasteners allow the work to be done in the shortest time period and provide incredibly strong connections.

In Conclusion…

There are numerous and varied benefits to using non-metallic rebar fastener clips on most jobs. Eliminating hand tying reduces repetitive use injuries from the twisting motion. Increasing connection strength drastically reduces the chance of a pinch or collapse injury. Eliminating steel ties altogether reduces the number of cuts/scrapes/infections. And, if MIA issues matter on your job, problem solved!

If you're ready to consider non-metallic rebar fastener clips at your plant, give us a call and we'll arrange a demonstration or trial.

Todd Monahan, a Concrete Products Territory Manager at Airmatic, has more than 15 years of experience in the Precast Concrete Industry.

Thanks for reading this post. If you'd like to know more about the subject, or have any questions about rebar cutting, bending or fastening for any of our experts, **please drop us a line.**