

WIRE MAT.. WIRE NOT?

A brief introduction to
welded wire mat
reinforcement

WELDED WIRE MAT has been called by many names: welded wire mesh, welded wire fabric, weldmesh, and the list goes on. The connotation of mesh and fabric is that welded wire reinforcement can only be lightweight, non-structural wire. However, that is not the case. Welded wire mat reinforcement is manufactured with high-strength, cold-worked steel wires that can be sized up to 5/8" in diameter.

Welded wire mat reinforcement is not new technology. In fact, its roots can be traced back to the 19th Century when, in 1885, engineer Elihu Thomson stumbled upon the technology that led to the invention of the resistance welder.¹ Thomson's discovery opened the door for inventor John C. Perry to design an automatic wire fencing machine that would go on to weld the way for wire reinforcement.²

The next milestone materialized in the wake of the devastation caused by World War II. With expensive, limited labor resources, there was a need for an affordable, highly-efficient reinforcement method to aid in the massive reconstruction effort. With its time and labor savings, in comparison to traditional rebar, welded wire mat reinforcement was the ideal solution. European architects, engineers, and contractors saw such great success using welded wire mat reinforcement that it's still heavily relied upon today, accounting for over 50% of all reinforced concrete projects.³

Today, the benefits of welded wire mat reinforcement are recognized far outside the borders of Europe. Countries like Australia, Canada, New Zealand, and the United States utilize welded wire mat reinforcement in diverse applications ranging from deep foundations to high-rise construction.²

When considering the versatility of welded wire mat reinforcement, it's difficult to picture an application that wouldn't be a good fit. The welded wire mat grid spacing is set with computer-automated precision, and can vary in both directions, thus providing fully-customizable, reinforcement solutions.

Additionally, wires come in a multitude of sizes that can precisely match the required area of steel, helping to stave off over-steeling of projects. The longitudinal and transverse wires are securely connected, at every intersection, by the process of electrical resistance welding.⁴ A study conducted at McGill University, in Montreal, concluded that the welded cross-wires improve the bond characteristics of the welded-wire reinforcement in concrete and reduce crack widths.⁵

Since its debut, welded wire mat reinforcement has helped save time and money on the job site as well as improve worker safety and reduce quality control issues. In these unprecedented times of labor shortages and wage hikes, wire not learn more about wire mat?

¹ Manney, D. (2020, October 22). Resistance Welding: An Accidental Discovery Helping Manufacturing. Schuette Metals Blog. Fab Times | Resistance Welding: An accidental discovery helping m (schuette-metals.com)

² Men of Steel (2006, July 1). The Story of Welded Wire Fabric and the Wire Reinforcement Institute. Men of Steel (wirereinforcementinstitute.org)

³ Wire Reinforcement Institute. (n.d.). Historical Data on Wire, Triangular Wire Fabric/Mesh and Welded Wire Concrete Reinforcement. TF 101-09-History.indd (wirereinforcementinstitute.org)

⁴ ASTM International. (2018) Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete. Book of Standards Volume 01.04 ASTM A1064.

⁵ Griezic, Andrew. (1992, May). Characteristics of Welded-Wire Fabric as Concrete Reinforcement. Department of Civil Engineering and Applied Mechanics, McGill University, Montreal. 126-127.