

Ohio Bridge Deck Replacement Utilizes Galvanized Welded Wire Reinforcement Instead of Conventional Rebar¹

Ohio Department of Transportation (ODOT) has recently completed a bridge deck replacement on SR 185 in Miami County utilizing galvanized, prefabricated wire reinforcement mats instead of conventional epoxy coated tied rebars. The 238.71' long, 31.5' wide bridge over the Stillwater River was in need of a deck replacement. Rather than using half width construction with traffic lights, it was determined to close the road completely and minimize closure time to 45 days by using a prefabricated reinforcement mats.



The mats for this project were furnished full width of the bridge in panels 31' long and 11'-9" wide. A 2'-7" length of the longitudinal wires extended out to allow for splicing to the adjacent section of mat. The bridge is skewed 20 degrees and therefore the end panels of the mats were prefabricated to match the skew. A trackhoe was used to set the mats onto the deck where they were transported to the proper place on the deck using the work bridge which rolled on the finishing machine rails.



The deck design was based on four beams at 8' c/c and a nominal deck thickness of 8 1/2". Reinforcement consisted of two mats with 1 1/2" bottom cover and 2 1/2" top cover. The top mat was comprised of D 20.8 wire @ 5" ctrs transversely and the bottom mat had D 19.6 wire @ 6" ctrs. The longitudinal wires were D19.6 @ 5" spacing with additional D29 wires over the piers. The beams were also retrofitted with shear connectors to produce a composite deck. The bridge had a 3'-9" overhang on both sides and the railing consisted of a conventional concrete parapet.

ODOT chose the prefabricated wire mats for deck reinforcement on this project for several reasons. The primary reason was to speed up construction by eliminating the time it takes to place and tie individual rebars. By using the prefabricated mats, there was precise spacing and uniformity of the placement. Another advantage, not originally anticipated, was a much more rigid mat which did not move or deflect from the workers walking on it.

ODOT is very interested in expanding the use of this method of reinforcing concrete. Even though not used on this project, the use of prefabricated wire mats for parapets also has considerable benefits.



¹ Developed from article in Ohio Concrete, August 2008, with permission.