N.Y. producers promote performance mixes.

High reactivity metakaolin (HRM), an admixture for high performance concrete (HPC), continues to make introads with New York State specifiers and producers. In April 1996, the N.Y. Department of Transportation (NYDOT) approved MetaMax HRM for use in HPC jobs. As a result, the concrete admixture is being applied in high visibility work on the Erie Canal, along with new Interstate 87 bridges over the Hudson River, and other projects around the state. According to a NYDOT task force, HPC greatly extends the life of structures. An "Engineering Instruction" issued by the task force in April 1996 stated that bridge decks cast with HPC have at least two to three times the estimated life span of decks made with more conventional specification concrete.

In seeking to foster the use of HRM in western New York, Buffalo-based Riefler Concrete Products recently hosted a demonstration of MetaMax-dosed HPC for more than 50 architects, engineers, DOT personnel, and bridge, road and building contractors. In addition to a technical presentation, Riefler poured a 12-by-95 ft. slab of the concrete in the loading area of its fuel farm.

The day was planned as an area launching for MetaMax HRM, the only metakaolin approved for use in Class HP concrete in New York, according to Riefler's Bill Haas, sales manager. "This concrete admixture has great potential in the area given our harsh winters and use of road salt," he says. "It is an economical material that resolves several issues associated with silica fume, and can yield a concrete that is easy to handle, place and finish." HRM mixes, he adds, are less prone to plastic shrinkage cracking than silica fume concretes. Jack Timmerman, president of Buffalo-based Lone Star Construction, the contractor that poured the slab, notes, "The concrete had excellent workability and was not as sticky as concrete containing silica fume, so overall finishing, especially the tooling needed at edges, was easier."

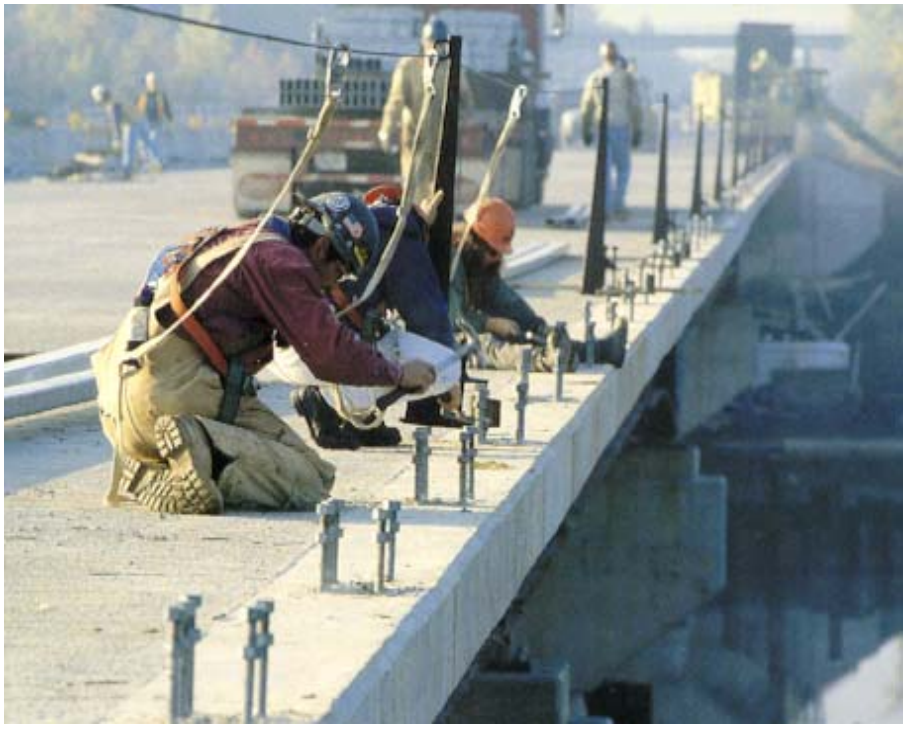
As performance on the slab is monitored, additional work with HPC is underway. On Erie Canal work, Cranesville Block Cos. of Amsterdam, N.Y., is supplying about 2,000 yd. of MetaMax HPC for the refacing of lock walls and abutments and extension of a dam apron. The two-year project is located near St. Johnsville, about 30 miles east of Utica, will be completed this year .According to Ralph Coon, the engineer in charge of the project for the N.Y. State Thruway Authority, the agency funding the work, the HPC was selected for its high strength and abrasion resistance. He reports that the mix has seven-day breaks of 5,000 psi and that once the correct slump is attained, air content is stable .

Reconstruction of Erie Canal.

Steve Dow, operations manager for Cranesville also gives the specialty concrete high marks. "It performs well and provides consistent slumps, strengths and water demand over a broad range of conditions," he notes. "It also reacts well with water reducers and retarders."

In another HPC project, Albany-based Bonded Concrete is delivering nearly 3,300 yd. of MetaMax mixes for the decks of new four-lane, twin bridges that carry I-87 over the Hudson River near south Glen Falls. The first phase of the three-phase project opened in June. The project will be completed in August 1998 ."High reactivity metakaolin outperforms the microsilica we used before," contends Bonded Concrete's Brendan Clemente, field supervisor. "It gives us a more stable mix that is easier to control. HRM-containing concrete takes air more readily and has a more consistent slump than concrete with silica fume. As a result, we find a rapidly growing interest in concrete with HRM in a broad range of projects."

Metakaolin was used on I-87 overpass.



John Mosko, marketing manager for concrete admixtures at MetaMax developer Engelhard Corp., Iselin, N.J., says that the properties MetaMax HRM builds into concrete make it suitable for many types of projects in New York and elsewhere. "In addition to the project on the Erie Canal and I-87, other work with MetaMax HRM in New York has included bridge spread footings, the floor of a water treatment plant on Ward's Island and a pier stabilization project in Brooklyn." "It is also

being used in garages, industrial plant floors, retaining walls, precast concrete, mortars, grouts, and other applications that not only call for strength and low permeability, but chemical resistance and the ability to color match."

MetaMax HRM is a highly refined, white pozzolan that reacts with the free lime formed when portland cement is mixed with water. The lime, which makes up about 25 percent of concrete by weight, is a soluble material having little structural strength. The reaction with HRM converts lime to a hard, insoluble cementitious material that greatly increases concrete strength. This material fills microscopic voids in the concrete, reducing permeability so water, often laden with chlorides, takes longer to reach and corrode reinforcing bars. The result: a dramatic increase in the structure life.