

Weisser North – Sioux Falls, SD
Submitted by: Ace Ready Mix

Weisser North project is an interior Slab on Grade project where Empire Construction was able to replace all of the rebar in the slab and replaced it with macro fiber. To accomplish this task, Ace Ready Mix reached out to Master Builders Solutions engineering team with the following: Rebar Spacing was #4 bar 24 inches on center. "MBS" was able to determine this rebar formula was not for structural support but for temperature and crack control, this is a relatively new idea for "SOG" and if everything pencils out can have both they ready mix supplier and concrete contractor benefit.

First, we had to come up with a mix design that would have enough paste volume to successfully coat all of the macro fibers and not lead to a poor finish. We accomplished this by adjusting our mix proportioning to satisfy the needed paste content, second, we had to pull the water out, Lower w/cm ratio = Lower chance for curling. We ran a 4th generation mid-range water reducer to produce a four-inch slump. "Challenge 1" when you add Macro fiber at 3lbs/cyd you have a tendency to lose two inches of workability, so the first two loads acted like a two-inch slump concrete, which is not ideal when doing a larger placement, "Solution" we adjusted the mid-range water reducer to batch a seven-inch slump, the new generation of mid-range is set time neutral throughout its dosage range so we would not have any problems with set time delay. "Challenge 2" When adding high dosages of Macro Fibers to a load, it can be difficult to get them to disperse properly, especially out of a wet batch plant, our solution was to hand dose the fiber as the concrete was being loaded onto the truck. To ensure quality on this project, Ace ready mix had a "Plant Person" verifying slumps before the trucks departed the plant, as soon as the truck arrived on site MBS had a representative verifying slumps and fiber dispersion throughout the load. This Entry is special to us because it was the first time in ACE and Empire's history that we were able to replace costly steel with efficient macro fiber.