E5® Nano Silica Project Showcase
Vantage Data Centers

ENHANCING THERMAL PERFORMANCE AND DURABILITY: THE CRITICAL ROLE OF E5® COLLOIDAL NANO SILICA IN VANTAGE'S 52-ACRE ASHBURN, VIRGINIA DATA CENTER DEVELOPMENT.

E5® admixtures densify concrete at the nano scale, improving thermal conductivity so underground duct banks and power corridors dissipate heat more efficiently, an essential requirement for modern high-ampacity data centers. By reducing permeability and microcracking, **E5®** was chosen to enhance long-term durability, protecting infrastructure exposed to moisture, freeze-thaw cycles, and thermal cycling common in high-load electrical environments. For Vantage, this translated to improved uptime reliability, extended lifecycle of buried electrical components, and reduced maintenance costs over the life of the facility. For Century Concrete, **E5®** allowed for more efficient hydration, improved finishability, fewer callbacks, and consistent performance even with variable aggregates and challenging weather conditions. All parties benefited from lower embodied carbon mix designs, streamlined curing practices, and faster readiness for slab coating, polishing, and rack assembly and installation, accelerating construction schedules for this mission-critical project.

PROJECT HIGHLIGHTS

Ashburn, VA
4,000 Cubic Yards
E5® Internal Cure®

HITT Contracting
Century Concrete
Vulcan Materials

THE MOST EFFECTIVE CONCRETE CURE FOR DATA CENTERS

E5® Colloidal Nano Silica admixtures help produce concrete with lower thermal resistivity, enabling heat to dissipate more efficiently from underground electrical infrastructure such as conduits and duct banks. By refining the pore structure and increasing density, **E5® Colloidal Nano Silica** enhances thermal conductivity, allowing electrical systems to operate at lower temperatures and significantly increasing their ampacity. This reduction in heat buildup minimizes the risk of overheating, which in turn improves reliability and extends the lifespan of buried electrical components. Because modern data centers generate extreme and continuous electrical loads, concrete with optimized thermal dissipation has become essential to protect power pathways and maintain operational stability. As a result, all data centers benefit from specifying **E5® Colloidal Nano Silica** admixtures in their concrete systems to maximize performance, safety, and long-term resilience.

Products used on the project: E5® Internal Cure®

E5® Incorporated

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