

Lake Hefner Clearwell Project

Location: Oklahoma City, OK

Products Used: US SPEC NA Grout and NA-50

Highlights: NA Grout successfully pumped over 500 ft in hot weather grouting conditions.

Located in northwest Oklahoma City, Lake Hefner was built in 1947 and currently serves as a place for sailing, fishing, picnicking and other activities. It also serves as a water source for the local community. The Lake Hefner Clearwell Project involved the construction of a 12 million gallon post-tensioned tank approximately 200 ft. x 500 ft. and 55 ft. high. The tank will provide a potable water source for the growing population of Oklahoma City. They required a long lasting, durable replacement to a conventionally reinforced tank that had deteriorated beyond serviceability.

The new tank contains bonded post-tensioning systems in the slab, walls and roof. The post-tensioned concrete design provides a more durable and leak free alternative when compared to conventionally reinforced concrete. The contractor, VSL, utilized their bonded VSLAB system on the base slab and roof making this the longest continuous application of the system to date (500 ft.). Both 0.5" and 0.6" bare cables were installed in bonded systems throughout the tank structure.

All tendons in the project were grouted using US SPEC's post-tension grouts. The floor slab and roof used a 2-strand system with small ducts, requiring an extremely flowable grout. Good bleed resistance was necessary for the vertical tendons as they were 23 feet tall. US SPEC NA Grout was used in the horizontal wall tendons and tendons in the floor and roof slabs. US SPEC NA-50 was used for the vertical wall tendons.

VSL Project Manager Ben Forbes stated, "NA Grout performed well, staying fluid over the entire 502 foot tendon length in hot temperatures. Pressures are not allowed to exceed 50-75 psi at the inlet and small ducts can restrict the flow, so fluidity of the grout while maintaining an acceptable water/cement ratio is paramount. We were able to successfully grout the full length of the tendons from one end with no interruptions using NA Grout."

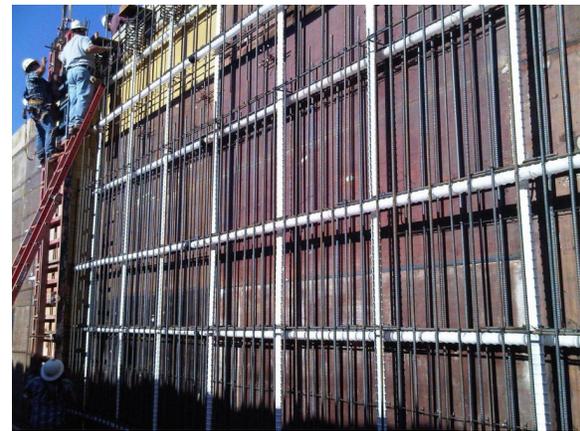
NA-50 provided a bleed free material for grouting the vertical tendons in the walls. After grouting, no bleed water was visible at the top of the tendons and all the pressure bleed testing easily passed.

VSL's work spanned nearly a year, so grouting took place during both the hot summer months and cold winter months. Grout bags were kept shaded and well ventilated for several days prior to grouting. Ice and careful thermal management of the dry grout allowed VSL to keep the mixed grout within manageable temperatures, and heating of the structure allowed grouting during winter months.

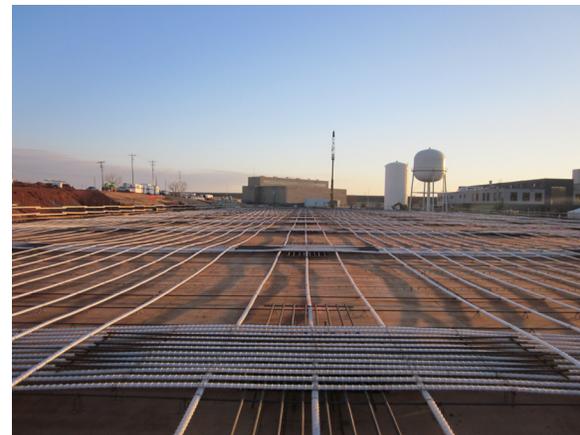
US SPEC PRODUCTS



Roof Placement at Dawn



Wall Post-Tensioning System



Roof Post-Tension System Layout