NCFI GEOTECHNICAL

AT&T Data Center Foundation

Kings Mountain, NC

Problem

At the AT&T Kings Mountain Data Center, a 1 million sqft facility, the maintenance staff was noticing cracking along its foundation slab and a joint that had been exposed along with one of its server rooms. The cracking appeared to be progressively worsening, and the staff suspected the presence of voids. After its engineer and subsequent GPR scans confirmed the staff's suspicions, AT&T began to look into stability options.

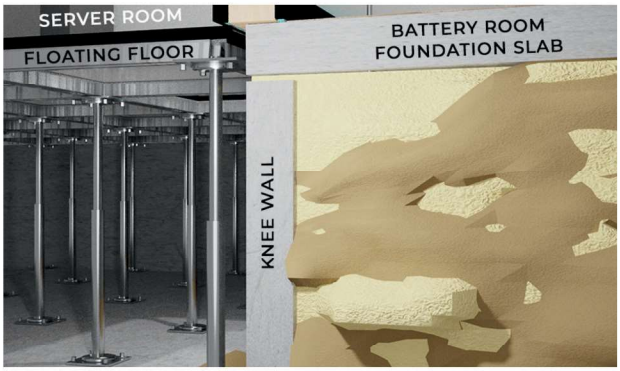
The knee wall was built above the server room's recessed slab, joining the battery room's foundation slab above. The server room had a floating floor built to meet the grade of the battery room's slab. The problem was that the joint where the knee wall and battery room foundation met was not adequately sealed, and soil loss was occurring. Because of the soil loss, cracks were forming along the joint and in the knee wall itself. This led to voids underneath the battery room's foundation, which could result in future foundation issues.

Solution

After reviewing the plans and several conversations with AT&T's engineering team, we determined that two issues needed to be resolved: sealing the joint and cracks and re-establishing the foundation's load into stabilized soil media," stated Karla Christmann, President of NEC Keystone.

After sealing the joints, NEC Keystone injected the NCFI-120 system. This system is a low-viscosity, single-component polyurethane formulated to fill voids and densify loose soils.

The polymer was injected at 32 locations through ¾" pipes at depths of 4' to 6' (due to soil density) along a knee wall separating the battery and UPS rooms from the computer server room.



Results

Once injected, the NCFI-120 permeated the soil and filled any void areas, including the knee wall joint and cracks. The permeation grout penetrates various soil types, including fines. After approximately 24 hours, the polyurethane fully cures and the soil below the slabs is highly dense, and the foundation load is re-established back into the soil.

The AT&T Data center project was a complete success. The knee wall, the data, and UPS room foundation slabs were stabilized against future soil loss and all voids were filled. The project took a total of 2 days with 1,125 lbs of the NCFI-120 injected. There were no interruptions to the data center's operations, and the customer was satisfied.

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NCFI 120 CASE STUDY

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