

## **FSD Airport Parking Structure, Sioux Falls, SD**

**Submitted by: Northland Concrete & Masonry**

The concrete foundations were started the end April 2023 on the FSD Airport Parking Structure, starting the placement of roughly 3,200 cubic yards of cast in place foundations. By mid-November 2023, 367,000 square feet of post tension slabs were completed, and 105,000 square feet of slab on grade were completed for a total project of approximately 16,000 cubic yards. The structural concrete on this project was designed to be slow strength gaining, high performance concrete to extend the project's lifespan. The use of slag in the structural concrete and wet curing of the slabs is what is driving this optimal performance.

While these high-performance mixes provide the optimum results for the end user, they pose many challenges to the ready-mix producer and placer. These mixes are slow to gain strength but end up gaining even greater strength in the long run vs the traditional concrete mix designs. When that volume of vertical concrete gets placed in 7 months, very strategic form work cycling and pour sequences needed to be in place to keep concrete operations moving forward every single day. Slabs can't be stressed until prescriptive strength gains are achieved, form work can't be cycled until 7-day wet curing is completed, strength gains are not rapid with slag mixes, and cooler temperatures extremely impact strength gains. The project team was very grateful to partner with Knife River on this challenging project, and pleased with the performance they provided on this project to make it a success!