



DSI References

Reference Details

Owner Collin County Hangar Owners Association, McKinney, TX, USA

DSI Unit DSI USA, BU Slab on Ground, Ft. Worth, TX, USA

DSI Scope Production and Supply of Monostrand Tendons



Floor Slabs for Executive Aircraft Hangars Post-Tensioned Using GSI/DSI Monostrand Tendons

Collin County Regional Airport, McKinney, Texas, USA

Collin County Regional Airport in McKinney, Texas, 45km north-west of Dallas, has become increasingly popular in recent years. The airport is a favorite of pilots and owners using executive and personal aircraft for trips throughout the country. In order to accommodate growth potential and make the airport even more attractive, 24 private high quality aircraft hangars were built in 2007. These free-standing hangars offer ample space for a variety of planes. Furthermore, the hangars are equipped with offices, kitchenettes and bathrooms.

The highly expansive soil in this area posed a special challenge during the construction of the hangars. Additionally, the use of white high gloss epoxy paint, to finish the floors, made concerns about cracks and the use of crack control joints a critical issue. In order to avoid potential damage and achieve long term durability, the floor slabs were post-tensioned using GSI/DSI Monostrand

Tendons.

The first lot consisted of eight 20 x 23m hangars (the equivalent of a total area of 460m² each) and sixteen 19 x 20m hangars (the equivalent of a total area of 380m² each). In total, nearly 10.000m² of floor slabs were built for this project. The individual slab-on-ground foundations are monolithic ribbed slabs with a 15.24cm thick slab and perimeter and interior beams spaced in both directions at 25.4cm x 76.2cm maximum centers. Post-tensioning is accomplished utilizing 12.7mm unbonded GSI/DSI Monostrand Tendons in the slab and beams. A final effective force of approximately 1.034kPa was achieved utilizing a two-stage stressing operation. Posttensioned floor slabs are resistant to tensile stress that is caused by movements of the expansive soil. Consequently, the risk of shrinkage cracks was reduced and the use of crack control joints became unnecessary.

The use of these floor slabs resulted in considerable cost benefits for the owner in comparison to the original design without post-tensioning. These benefits are achieved by reductions in quantities of concrete, reinforcement, excavations and the elimination of the crack control joints. Long term cost benefits will also be realized by the elimination of maintenance to cracks and control joints. The developer and owners are extremely happy with the results obtained and future projects utilizing GSI/DSI Monostrand Post-Tensioning Systems are on the drawing board.

DSI is proud to have contributed to the success of this exceptional project with their long standing expertise. The new hangars were handed over to the owner in autumn 2007. The project won the prestigious 2008 Award of Merit from the Post-Tensioning Institute.

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