



CASE HISTORY

SAFEBASE™ 4.5" O.D. HELICAL PIERS

450' GRAIN BIN WALLS PUSHED BACK TO PLUMB



SafeBasements of Minnesota had been contacted regarding movement of this 450'x300' grain storage facility. The perimeter walls are 12' tall 1' thick reinforced concrete sitting on top of a 2' thick 7'-6" wide footing tied into the interior slab. Several projects have been completed to prevent movement of the perimeter walls. In 2008 and 2013 a series of helical piers were installed beneath the footings along the 450' sides of the building, and the walls were lifted and left in a plumb and level condition. Over the years the walls began moving independently of the footing from the force from the grain pushing them outwards. A series of steel buttresses were custom designed and fabricated by SafeBasements to be supported by helical piers and installed along each of the 450' walls. The buttresses allowed for straightening of the walls by connection to hydraulic cylinders.

4.5" OD SafeBase™ Helical Piers were installed approximately 12'-6" on center 10' from the outer face of the wall. The piers were then cut to a height approximately 14" above the top of the footing. The galvanized steel buttresses were assembled with brackets connecting to the helical piers and anchored to the foundation wall and footing. A total of 26 were installed on each side of the building for a total of 52 steel buttresses supported by helical piers.





After the installation of each side was completed, hydraulic lift cylinders were attached to the brackets supported by the helical piers. When the hydraulic cylinders lifted, the buttresses rotated pushing the top bracket mounted to the foundation wall in. All the hydraulic cylinders on a side were hooked up in a series to provide a uniform push to the full length of the wall at once. The top of the wall was pushed in approximately 9" near the center of the west wall. Both walls were left in plumb position with the brackets locked in place to prevent further movement in the future. The project was completed in October of 2021.



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