

CASE STUDY

Biloxi, MS



CANTSINK™
— SUPPORTING INNOVATION —



Biloxi Pedestrian Beach Pathway

Helical Piles Support Boardwalk / Prevent Beach Erosion

SITUATION

Continued storm activity and storm surge over time damaged the concrete pedestrian walkway located on the beach in Biloxi, MS. The result was erosion of the beach that compromised the foundation wall intended to support the 12' + wide pedestrian walkway at the connection where it intersected with the wood boardwalk that extended into the ocean. The destruction affected an area of the boardwalk stretching roughly 200 feet in length with maximum settlement of 14" at worst, leaving the boardwalk in an unsafe condition for pedestrian use.

CASE STUDY

Biloxi Pedestrian Beach Walkway



SCOPE OF WORK

Cantsink was retained by a consulting engineer on behalf of the Harrison County Engineering Department to evaluate and repair the damage. Following a site visit, the team determined the most effective solution was to underpin the face side of the wall and lift the 200 LF section evenly across all brackets, beginning at the 14° low point and tapering to about 0.5° where the structure met undamaged sections.

Calculated loads showed that remedial underpinning piles spaced up to 5° on center could address the estimated 12 to 15kip design lead. Because an unknown burden of backfill and the friction of the testing in wet sand needed to be accounted for, the target design lead was raised to a minimum of 20 kips per pile, with a minimum installation torque of 6,700 f-b favored to increase pile capacity to 30 kips — better suited to raising the concrete structure the full 14° to meet County requirements.

Soil data was limited to three borings taken 50 to 100 yards from the work area, indicating sands/clay conditions, this provided a basis for assessing pile depth, and a bid depth of 20 feet per pile was used for estimating purposes.

12° diameter core holes confirmed that storm surge had eroded most of the fill material (sand) beneath the walkway. The scope also included placing an estimated 250 CY of sand and 50 CY of flowable fill beneath the walkway following the lift.

ANCHOR SYSTEM

Cantsink's 2.5" schedule 40 galvanized piles, with a double 12°/14° helix configuration, were installed using Cantsink's standard remedial underpinning bracket assembly. The products used are listed in ESR-1599, certifying compliance with AC308 and the International Code Council (ICC).

RESULT

Pile installation began the afternoon of March 16th with one crew, joined by a second crew the following day. All 30 remedial piles were completed by midday on the 19th, and the walkway was lifted that afternoon. A total of 1,176 LF of piles was installed at an average depth of about 39 feet per pile.

Lifting was performed in progressive increments to limit cracking of the footings and walls and to avoid binding of the wall and footing system. Elevations were recorded before, during, and after the lift. The structure was raised the full 14° of settlement, achieving a slight pitch away from the beach and back toward the parking area as intended, and fill material was placed beneath the walkway following the lift.