2.3.4 Pile and Pier Foundations

Three to seven feet of vertical erosion at the seaward row of piles was common (see Figure 2-7). This erosion, coupled with insufficient penetration of the piles on many structures, led to structural damage to or collapse of primarily pre-FIRM structures. Undersized piles (6-inch diameter timber in some instances) were not sufficient to resist storm forces; they generally failed and resulted in structural damage or collapse. Piers constructed of concrete blocks on shallow footings frequently collapsed as a result of erosion. Well-designed and well-constructed pile and pier foundations withstood the forces exerted by the storm. Use of splicing techniques was also observed on some eroded piles (see Figure 2-8). Although the splicing of piles placed these structures at increased risk of failure, no failures related to spliced piles were observed

2.3.5 Framing Systems

The BPAT found many examples of poor framing of timber floor beams and joists in platform-type construction In particular, poorly fashioned beam-to-beam and joist-to-beam connections were common. Typical problems included the following:

- pile notching greater than 50 percent of pile cross-section
- poor alignment of piles, which resulted in unsupported beams at piles
- use of wooden shims to support beams (i.e., to compensate for notches cut too low)
- overreliance on nails and thin metal straps/hangers

Glue-laminated beams and joists were observed in exterior applications in some recent post-FIRM residential construction. The use of laminated structural members in exterior applications

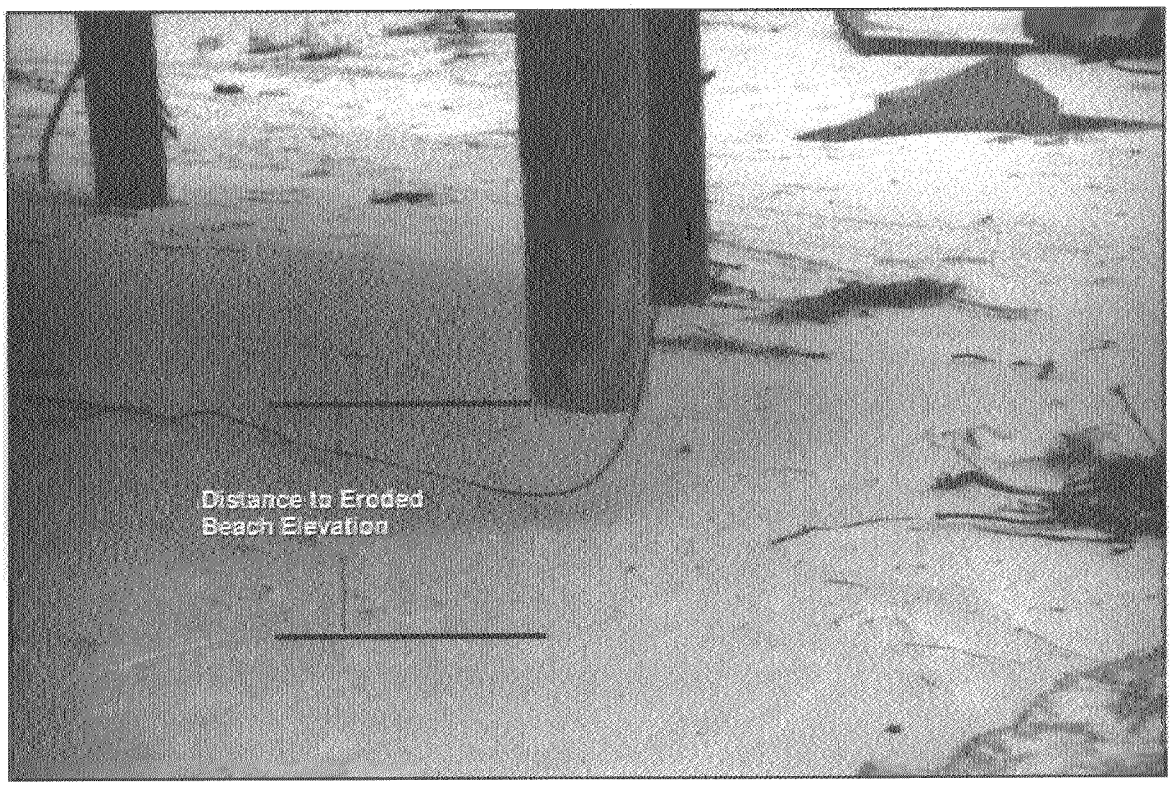

Figure 2-7 *These piles were not embedded deep enough to survive the erosion of the sand. As a result, there is now a large gap between the bottoms of the pilings and the ground surface.*