

Tarpon Pier

Concrete verse Steel Piles



*** City Piles will be painted Gray***

City Of Key West
Engineering Department

Background

- City Staff initially questioned A/E recommendation to use steel piles.
- A/E developed case that steel piles are
 - Cheaper overall as fewer piles required
 - Stronger/higher durability
 - Not subject to damage during driving operations
 - Steel Piles can be repaired for an indefinite life

Current Design

- **Steel Piles**

- Application of “Two coat Coal Tar Epoxy-Polyamide in accordance with FDOT specifications 560. DFT of each coat is 8mil. This coating shall be applied from the top of the pile to 2 feet below the mudline. A grey top coat of 2 coats of two-part linear polyurethane shall be applied over the coal tar epoxy from the top of the pile to the Mean High Water mark. This coating shall be grey in color.
- Minimum embedment: 17.6 feet below mudline
- Use of 18” and 24” piles (most are 18”)
- Pipe walls are 0.5” thick
- Normally steel piles can be driven into hard substrate. Technical specifications indicate that auguring may be required and will be at contractors expense

A/E Table of Comparisons

Item	Steel	Concrete
# of Piles	8 – 24” Epoxy Coated Round Piles 27 – 18” Epoxy Coated Round Piles Total Piles: 35	8 – 24” Prestressed Square Piles 36 – 18” Prestressed Square Piles Total: 42 Piles
Design Life	Without Coating 20 years With Coating & no maintenance 40 years Additional coatings can extend design life indefinitely	30 to 50 years No real method for long term maintenance
Cost	Material + Installation \$185,000	Material + Installation \$220,000
Maintenance Cost	Coating cost in 20 years likely at \$15,000 to \$25,000	None - piles will require replacement at end of design life

Bid Results

- Lowest Responsive Bid (Steel Piles)
 - Main Pier Piles: \$107,800
 - Main Pier with Finger Pier Piles: \$201,050
- A/E estimate:
 - Steel System :\$185,000
 - Concrete System: \$220,000

Staff Recommendations

- That the project be awarded as designed
- That staff will discuss possible value engineering opportunities in regards to concrete piles after award.