

# Shore Drive Restoration

## Keyport, New Jersey

- **Installation:** Polaris CE
- **Linear Feet:** 1500+
- **Sheet Lengths:** 33'
- **Soil Description:** Sand/Clay
- **Existing Wall:** Wood
- **Contractor:** Bird Construction  
Bayville, NJ
- **Design Engineer:** Birdsall Engineering  
Eatontown, NJ
- **Installation Method:** HPSI Vibratory Hammer  
Model 40E
- **Project Details:**

The design for this project had the Endurance Polaris sheet pile acting as a structural bulkhead. As part of the Shore Drive Renovation project the bulkhead will allow the roadway to be raised 2-4'. In addition, a new pedestrian walkway will be constructed above the new bulkhead. The project also includes construction of new docks and piers as well. Polaris CE was chosen over steel because of its long-term life expectancy.



# Forbes Park

## Boston, Massachusetts

- **Installation:** Polaris CE
- **Linear Feet:** 1000+
- **Sheet Lengths:** 16-22'
- **Soil Description:** Sand/Clay
- **Existing Wall:** None
- **Contractor:** Sea & Shore Contracting  
Braintree, MA
- **Design Engineer:** Sea & Shore Contracting  
Braintree, MA
- **Installation Method:** HPSI Vibratory Hammer  
Model 40E
- **Project Details:**

The design for this project had the Endurance Polaris sheet pile acting as both a structural bulkhead and a cut-off wall. The former warehouse area is being redeveloped into condominiums but because of the previous industrial use environmental remediation is being performed. Polaris was chosen because of its strength as a bulkheading material and its chemical resistance.



# Hurricane Dennis Restoration

## Santa Rosa Beach, FL

- **Installation:** Polaris & Polaris CE
- **Linear Feet:** 8000+
- **Sheet Lengths:** 30-36'
- **Soil Description:** Sand/Compressed Organic Peat
- **Existing Wall:** None
- **Contractor:** Southeastern Aquatic Services  
Defuniak Springs, FL
- **Design Engineer:** JAD Engineering  
Destin, FL
- **Installation Method:** Vibratory Hammer  
800 lbs
- **Project Details:**

The designs were centered on foundation stabilization and dune restoration of several properties. Because of the possible exposed span of 15+ ft., the environmental requirements for construction and the need to drive through the rock hard peat layer the Polaris sheet pile was chosen.

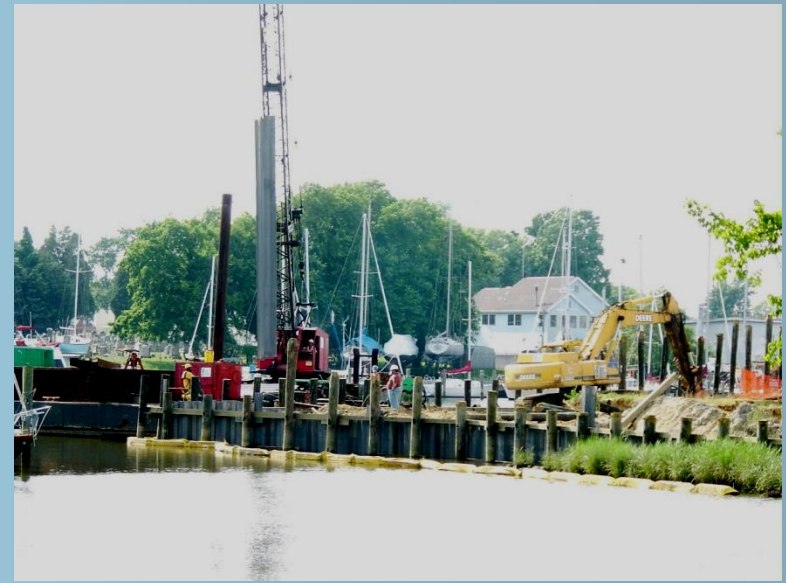


# Deep Harbor

Cambridge, MD

- **Installation:** Polaris CE
- **Linear Feet:** 417
- **Sheet Lengths:** 16-32'
- **Soil Description:** Sand/Clay
- **Existing Wall:** Steel Sheet Pile
- **Contractor:** Virginia Marine Structures  
Virginia Beach, VA
- **Design Engineer:** Andrew Miller & Assoc.  
Cambridge, MD
- **Installation Method:** Vibratory Hammer
- **Project Details:**

Beazer Homes was in need of the restoration of an existing steel bulkhead for a new condominium development. They chose Endurance Polaris for the strength, longevity and cost competitiveness of the product.



# Jefferson Parish

## Kenner, Louisiana

- **Installation:** Polaris CE
- **Linear Feet:** 2000
- **Sheet Lengths:** 20'
- **Soil Description:** Loose Uncompacted Organics
- **Existing Wall:** None
- **Contractor:** Jefferson Parish Drainage Dept.  
New Orleans, LA
- **Design Engineer:** Jefferson Parish  
New Orleans, LA
- **Installation Method:** Trackhoe Bucket
- **Project Details:**

To maintain slope stability on its drainage canals, the Jefferson Parish Drainage Dept. used the Endurance Polaris CE in a cantilever design. Polaris's strength made this possible even in the poorest of soils.

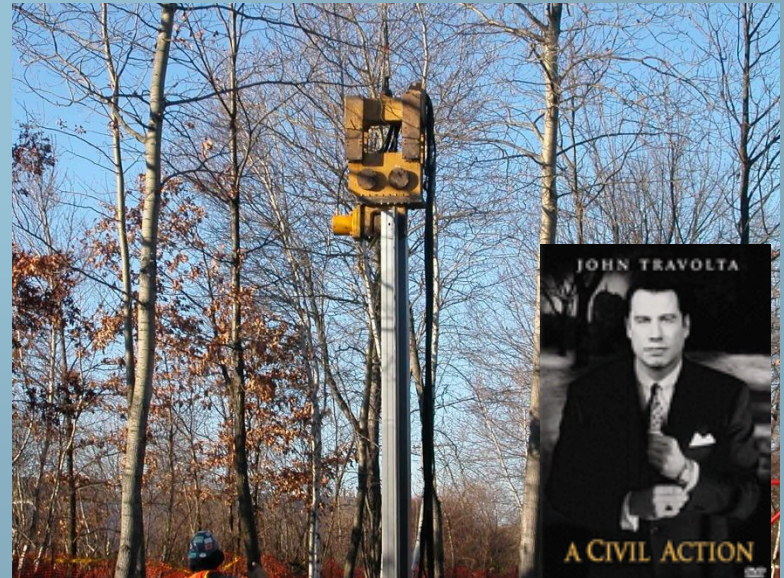


# Olympia Superfund Site

## Boston, Massachusetts

- **Installation:** Polaris CE
- **Linear Feet:** 450
- **Sheet Lengths:** 20-25'
- **Soil Description:** Clay/Loose Gravel
- **Existing Wall:** None
- **Contractor:** Sea & Shore Contracting  
Braintree, MA
- **Design Engineer:** Geo Insight  
Boston, MA
- **Installation Method:** Vibratory Hammer Model  
H&M-150
- **Project Details:**

The Polaris was installed to create a cut-off wall around a designated EPA Superfund site containing TCEs. The site was made famous by the film "A Civil Action", starring John Travolta.



# Norfolk Naval Base V-121

Norfolk, VA

- **Installation:** Polaris CE
- **Linear Feet:** 4600
- **Sheet Lengths:** 26'
- **Soil Description:** Loose Sands
- **Existing Wall:** Steel Sheet Pile
- **Contractor:** Virginia Marine Structures  
Virginia Beach, VA
- **Design Engineer:** NAVFAC - US Navy  
Norfolk, VA
- **Installation Method:** Vibratory Hammer
- **Project Details:**

The project was to repair the failed steel bulkhead. Northstar engineers were asked to value engineer the project from the suggested steel sheet pile. The Endurance Polaris CE sheet pile provided the strength needed to retain the flowable concrete backfill, with some sections being 17 ft. tall, and still have a material cost saving.



# Norfolk Naval Small Craft Basin

Norfolk, VA

- **Installation:** Polaris CE
- **Linear Feet:** 1200
- **Sheet Lengths:** 26-34'
- **Soil Description:** Sand/Broken Concrete
- **Existing Wall:** Steel Sheet Pile
- **Contractor:** Tidewater Skanska  
Lanexa, VA
- **Design Engineer:** NAVFAC - US Navy  
Norfolk, VA
- **Installation Method:** HPSI Vibratory Hammer
- **Project Details:**

With the success of the US Navy V-121 repair using the Endurance Polaris sheet pile, Northstar received another request for material on a neighboring project. The Polaris was chosen in lieu of steel sheet pile for its extended service life. To be considered for this project Northstar had to subject the Polaris part to 10,000 hrs. of durability testing.





# Quonset Airport Commission

## Quonset, RI

- **Installation:** Polaris CE
- **Linear Feet:** 1929
- **Sheet Lengths:** 20-26'
- **Soil Description:** Sand/Gravel
- **Existing Wall:** Steel Sheet Pile
- **Contractor:** Specialty Driving Services  
North Kingston, RI
- **Design Engineer:** Laszlo & Associates  
Providence, RI
- **Installation Method:** Vibratory Hammer
- **Project Details:**

Endurance Polaris sheets were used to reface a failed steel bulkhead. After driving the sheets a lean concrete was used as a backfill material. Concrete interaction with the Endurance resin system is not a concern because of the durability of the resin in an alkaline environment.



# Asseteague Island National Seashore

## Accomack County, VA

- **Installation:** Polaris CE
- **Linear Feet:** 695
- **Sheet Lengths:** 12-14'
- **Soil Description:** Sand
- **Existing Wall:** Steel Sheet Pile
- **Contractor:** Virginia Marine Structures  
Virginia Beach, VA
- **Design Engineer:** Federal Highway  
Administration  
Washington, DC
- **Installation Method:** Vibratory Hammer
- **Project Details:**

The Endurance Polaris sheet pile was driven in front of aging steel piles acting as a bridge abutment. The overall sheet length was reduced from the original steel sheet pile specifications. The strength of the Polaris sheet pile allowed for approximately 80% of the structure to be cantilevered.



# Coquille Dam Restoration

Coos Bay, OR

- **Installation:** Polaris CE
- **Linear Feet:** 1200
- **Sheet Lengths:** 26-40'
- **Soil Description:** Compacted Sand/Debris
- **Existing Wall:** Earth Dam
- **Contractor:** Laskey-Clifton  
Reedsport, OR
- **Design Engineer:** US Bureau of Reclamation  
Denver, CO
- **Installation Method:** Vibratory Hammer Model  
Ape 200 & Steel Mandrel
- **Project Details:**

The Endurance Polaris sheets were used in this project as a cut-off wall and a dam core stabilization structure for the Coquille Indian Reservation. Sheets were driven 20 ft. in the ground and a new berm was constructed around the exposed sheet pile. Endurance's strength allowed for 20 ft. of exposed pile to stand before berm construction without added bracing.



# Cape May Marina

## Cape May, NJ

- **Installation:** Eclipse
- **Linear Feet:** 200
- **Sheet Lengths:** 20-25'
- **Soil Description:** Sand
- **Existing Wall:** Wooden Bulkhead
- **Contractor:** Pepper Marine Contracting  
Cape May, NJ
- **Design Engineer:**
- **Installation Method:** Vibratory Hammer
- **Project Details:**

The original design was a wooden bulkhead with three wales and round face piles to replace the existing wooden bulkhead. With assistance from Northstar engineers the project was value engineered to reduce the overall support structure. Using the Eclipse sheet pile the contractor was able to remove two of the wales and the face piles from the original design and still maintain the strength needed for a 13 ft. exposure.



# Lake Skaneateles

## Skaneateles, NY

- **Installation:** Polaris CE
- **Linear Feet:** 200
- **Sheet Lengths:** 8-12'
- **Soil Description:** Sand/Rock
- **Existing Wall:** Wooden Bulkhead
- **Contractor:** F.J. Estlinbaum Lumber  
Marcellus, NY
- **Design Engineer:** Northstar Vinyl Products  
Assisted in design
- **Installation Method:** Vibratory Hammer
- **Project Details:**

The project consisted of the refacing of a timber bulkhead with bedrock approximately 3 ft. below the sand lane. Endurance Polaris piling was chosen because of the harsh climate changes and possibility of considerable ice loading.



# New Smyrna Beach Bulkheads

## New Smyrna Beach, FL

- **Installation:** Polaris CE
- **Linear Feet:** 4000+
- **Sheet Lengths:** 19'
- **Soil Description:** Sand
- **Existing Wall:** None
- **Contractor:** Antinori Group, Inc.  
Port Orange, FL
- **Design Engineer:** Antinori Group, Inc.  
Port Orange, FL
- **Installation Method:** Vibratory Hammer
- **Project Details:**

Endurance Polaris was chosen for this project because of the direct exposure to the Atlantic Ocean. Hurricanes had previously caused extensive erosion to the beach. With the threat of more storms a product had to be used that could install quickly and still have the strength to withstand constant abuse. Polaris's strength and alkaline resistance allowed for a single concrete cap/wale at the top of each wall.



# Tammany Holding/FEMA Housing Slidell, LA

- **Installation:** Polaris
- **Linear Feet:** 3045
- **Sheet Lengths:** 16'
- **Soil Description:** Firm to Med Clay
- **Existing Wall:** None
- **Contractor:** Lamulle Construction  
Slidell, LA
- **Design Engineer:** None
- **Installation Method:** Plate Compactor
- **Project Details:**

The project was a projected FEMA housing site with long term use as a marina for the Lakeshore Estates development. It was the contractor's first use of composite and, as a result, he was quickly won over versus other materials on the market. The Polaris was a better option over steel because of corrosion and a better choice over vinyl because of strength.



# Entergy Power

## Baton Rouge, LA

- **Installation:** Polaris CE
- **Linear Feet:** 250
- **Sheet Lengths:** 18'
- **Soil Description:** Firm Clay
- **Existing Wall:** None
- **Contractor:** Barrie Construction  
New Orleans, LA
- **Design Engineer:** Northstar Vinyl Products  
Assisted in Design
- **Installation Method:** Vibratory Hammer
- **Project Details:**

Because of the location of the wall next to an Entergy Power facility there was a concern using steel sheet pile. The steel piles could easily carry a stray current from the facility degrading the life of the sheets and causing the area around the sheets to be electrically charged. Endurance Polaris's non-conductive properties and strength were suited well to act as the perfect barrier.





# FDOT HWY 98

## Okaloosa County, FL

- **Installation:** Polaris CE
- **Linear Feet:** 12,863 Feet
- **Sheet Lengths:** 18'
- **Soil Description:** Sand/Broken Asphalt
- **Existing Wall:** None
- **Contractor:** Archer Western  
Pensacola, FL
- **Design Engineer:** **FDOT/Northstar**  
Assisted in Design
- **Installation Method:** Vibratory Hammer  
Steel Mandrel
- **Project Details:**

The 2004 and 2005 Hurricane seasons took their toll on a 2 mile stretch of Hwy 98 between Ft. Walton Beach and Destin, FL. The roadway was being undermined and was in dire need of having a permanent repair. The best solution was to install a sheetpile cut-off wall along the side of the roadway. The design incorporated gabion baskets and a concrete cap. The Polyurethane part was critical in the design due to the high PH in Concrete.



# 45th Street Shopping Center

## Ocean City, MD

- **Installation:** Polaris CE
- **Linear Feet:** 350 Feet
- **Sheet Lengths:** 16'
- **Soil Description:** Sand
- **Existing Wall:** Wood
- **Contractor:** Case Marine  
Annapolis, MD
- **Design Engineer:** Coast Watch
- **Installation Method:** Plate Compactor
- **Project Details:**

The existing shopping center is the first phase of new Condominiums and retail shopping. The design called for having a wall that could withstand the load of a full ladder fire truck. The wall was right next to the fire lane. The design also used the Manta Ray mechanical anchors for the tie-back. The Polaris was a VE to the original SG 950 series



# West Bank Marina

## Patchaugue, NY

- **Installation:** Eclipse
- **Linear Feet:** 420 Feet
- **Sheet Lengths:** 16'
- **Soil Description:** Sand/Debris
- **Existing Wall:** Wood
- **Contractor:** Marina Owner
  
- **Design Engineer:** Northstar
  
- **Installation Method:** Vibro Hammer
  
- **Project Details:**

The existing wood wall was completely eaten through by the marine borers. The marina was looking for a material that would not require any face piles because of their short life in the marine environment. The exposed wall is 8' tall with a single tie back.



# East Port Yacht Club

## Annapolis, MD

- **Installation:** Polaris CE
- **Linear Feet:** 800 Feet
- **Sheet Lengths:** 16' - 22"
- **Soil Description:** Silty Clay
- **Existing Wall:** Wood
- **Contractor:** John H Norris  
Annapolis, MD
- **Design Engineer:** Jack Feick & Assoc.
- **Installation Method:** Plate Compactor
- **Project Details:**

East Port Yacht Club is a very high profile club located in Annapolis, MD. The project was originally permitted with wood and a mechanical tie back. The marina next door would not permit anchors to go under the property so a product that could be cantilevered was necessary. The Polaris fit the model and was incorporated into the new design.



# Town of Oyster Bay

## Long Island, NY

- **Installation:** Polaris CE
- **Linear Feet:** 650
- **Sheet Lengths:** 22'
- **Soil Description:** Firm Sand/Rock
- **Existing Wall:** Steel
- **Contractor:** Amma Construction  
Long Island, NY
- **Design Engineer:** Northstar VE  
Assisted in Design
- **Installation Method:** Vibratory Hammer
- **Project Details:**  
Replacement of a rusted steel wall for a future park renovation.



# G&T Dockbuilders

## Long Island, NY

- **Installation:** Polaris CE
- **Linear Feet:** 350'
- **Sheet Lengths:** 20'
- **Soil Description:** Sand
- **Contractor:** G&T Dock builders  
Long Island, NY
- **Installation Method:** Jet
- **Project Details:**

A local Dock builder chooses to install Polaris composite for his personal marina property in Oceanside. The wall height varies from 12 - 14'.



# Wickford Shipyard

## New Kingstown, RI

- **Installation:** Polaris CE
- **Linear Feet:** 1000'+
- **Sheet Lengths:** 24'
- **Soil Description:** Sandy light rock
- **Contractor:** Self-install by Wickford Shipyard
- **Installation Method:** Plate compactor
- **Project Details:**

A local commercial marina chooses to install Polaris composite as part of a new expansion for his marina property in New Kingstown. The wall height varies from 8 - 12' exposed height.

