QUALIFICATIONS PACKAGE

HEAVY CIVIL & MARINE CONSTRUCTION

CASHMAN

CONTENTS

CASHMAN

Jay Cashman, Inc.
549 South Street | Quincy, MA 02169
www.JayCashman.com | 617.890.0600

INTRODUCTION

At Cashman, we understand that communities depend on modern infrastructure to remain competitive in the global market. It is our goal to provide innovative engineering solutions that minimize the risks and costs associated with improving local infrastructure.

As a leading provider of Construction Services, Cashman creates value for Owners by partnering with clients to develop innovative ideas, maintaining achievable schedules, and conducting our operations under budget. We consistently apply these concepts while maintaining Safety and Quality in all that we do.

Cashman recognizes its responsibility to improve the communities in which we work, whether the work is performed close to home or in the international market. That is why upholding our values of integrity, accountability, safety, and environmental conservation is paramount at each of our work sites.

Utilizing sound engineering and advancing the latest technologies, we execute heavy civil and marine construction projects across a broad range of services. Not only do we implement the work, we apply our extensive regulatory experience to help Clients navigate the complex permit approval processes.

Current and recent construction projects performed by Cashman have improved the physical infrastructure in communities and have enhanced local and regional economies. From port development through marine-related oil and gas infrastructure projects throughout the Eastern Seaboard, the Caribbean and beyond, Cashman has diversified its abilities, added expertise and equipment, maintained core competencies, and maintained its focus on safety and quality. Our goal is to deliver quality infrastructure with minimal adverse impact to stakeholders by working closely with Owners so you can focus on your business and operational goals.

Our engineers are implementing sustainable solutions through technology, innovation, and experience to meet your environmental needs. Through our materials facility in Elizabeth, NJ, we transform construction waste and dredged sediment into materials that are beneficially reused throughout the region. Our vast fleet of equipment—coupled with our depth of experience—makes us uniquely qualified to tackle our Clients' most demanding challenges with regard to disposal or reuse of construction or waste materials.

To learn more about the full scope of our capabilities, visit www.JayCashman.com.

COMPANY HISTORY

The Cashman Family history in Heavy Civil and Marine Construction dates back to the late 1800s when relatives of Mr. Jay Cashman, the Founder and Chairman of the Cashman Group of Companies, constructed the iconic Provincetown Pilgrim Monument at the tip of Cape Cod. From an early age, Mr. Cashman shared the same enthusiasm, passion, and know-how for the business as his ancestors.

Coming of age through the 1960s and 1970s, Mr. Cashman quickly built a successful track record of performing heavy civil and marine contracting projects throughout the Northeast. Notable work included rebuilding destroyed seawalls and jetties after the Blizzard of '78 and constructing a new marine facility for the Martha's Vineyard Steamship Authority.

In 1994, Mr. Cashman founded Jay Cashman, Inc. which represents the primary heavy civil and marine construction entity within the Cashman Group of Companies. Through the 1990s the firm continued to grow and prosper, executing large-scale heavy civil and marine construction projects including components of such notable regional projects as Boston's Central Artery "Big Dig" Program, the Deer Island Sewer Treatment Facility, Spectacle Island Environmental Remediation and Clean-Up, the MBTA South Shore/ Greenbush Commuter Rail, and the Fore River Bridge Construction in Quincy, Massachusetts.

Success on large-scale projects such as these has come as a result of expertise, dedication, safe work practices, and efficient execution. Cashman's history as a quality construction contractor is built through a strong team culture internally and externally that is cultivated with Owners and Joint Venture Partners alike.

Today, the Cashman Companies have grown to a privately held conglomerate, which include Jay Cashman, Inc.; Cashman Dredging and Marine Contracting Company, LLC; Sterling Equipment; and several related business lines that share resources and expertise across a diverse array of contracting segments and business units. With over 40 years of experience, a high-performance staff of operational and project-related personnel, and a comprehensive portfolio of services and resources, Cashman looks forward to teaming with Clients to take on challenging projects safely and exceed expectations on all fronts.

Cashman specializes in building and repairing piers and bulkheads, stone structures, bridges, and railways.

Cashman's Civil Building / Infrastructure Services include:

- Excavation and earthwork
- Facilities decontamination and demolition
- Constructability review / design phase consulting
- Innovative and traditional steel sheeting systems
- Sludge solidification / soils stabilization
- Slurry wall and trench construction
- Land reclamation
- Storm or disaster recovery
- Site restoration

LOCATIONS

MA

☆ Corporate Headquarters:
549 South Street
Quincy, MA 02169

NY

2877 Richmond Terrace
Staten Island, NY 10303

NJ

650 South Front Street
Elizabeth, NJ 07202

With numerous long-term projects in various parts of the country—for example, our work in Florida and the Carolinas—Cashman often sets up regional offices to more quickly respond to Client needs.

PROJECT MANAGEMENT

The complex nature of marine construction, dredging and environmental remediation makes it imperative to have an integrated, efficient team of experts managing a project. Cashman operates using a flat corporate organizational structure to ensure Clients have streamlined access to senior project and corporate decision-makers at all times. Having a flat organizational structure also means we are flexible to meet Customers' evolving needs and provide these key benefits:

- **Improved Communication.** Cashman's workforce quickly receives communications regarding safety, project benchmarks, best practices, and other critical messages. Reducing managerial layers enables our workforce to quickly provide managers innovative solutions to everyday problems.
- **Rapid Response to Customer Needs.** Top-level project managers interface directly with superintendents, foremen, engineers, trade craft employees, and laborers, which makes decision-making rapid and enables employees to provide input directly to decision-makers.
- **Operational Flexibility.** Cashman can improve operations by implementing strategic organizational adjustments rapidly. During the course of all project operations, our organization can quickly re-align to meet short-term Customer goals.
- **Efficient Performance and Production.** Cashman employees are more productive when they can take ownership of the work they perform. With our flat organizational structure, we promote basic decision-making at the employee level. This reduces the need to seek managerial decisions for basic tasks and creates an empowered workforce that is dedicated to performing efficient, effective, results-driven work.

Executing this approach is our team of innovative project managers. Cashman project managers are experts in their fields and bring decades of heavy civil and marine experience to their projects. These leaders support project employees and are available to Customers at all times to discuss project needs and provide direct, rapid support.

SAFETY POLICY

Our Safety Policy is guided by the straightforward goal: *Everyone Goes Home Safe*. Cashman is committed to providing job sites that are free from recognizable hazards. This is achieved by making the safety of all staff and every operation a priority throughout each project, from planning through to completion.

We manage safety issues and concerns by adhering to the following principles:

Compliance. We comply with all applicable safety regulations and requirements and implement programs and procedures to assure compliance.

Prevention. We employ management systems and procedures to identify and correct unsafe conditions. We train our employees to identify potential risk so we may take steps to prevent harm to our employees, other trades on the project, or the community and environment.

Monitoring. We measure our safety performance and efforts. The measurement results allow us to benchmark in order to evaluate our performance against the industry and, more importantly, against our own safety standards, always seeking ways to improve outcomes.

Communication. We communicate our commitment to a safe work environment and expectations at every project location to our employees, vendors, and clients. We share lessons learned throughout the company.

Continuous Improvement. We seek out opportunities on every project location to improve our performance and adherence to these principles.

ENVIRONMENTAL COMPLIANCE

At Cashman, our commitment to the environment is apparent at each work site. Cashman is one of the largest hazardous waste contractor in the United States. As such, our employees take their responsibility to the environment seriously, and we implement all controls necessary to ensure regulatory and permit compliance on every project.

A significant portion of Cashman's business is marine-based, making water quality and erosion control issues paramount. Before each project, Cashman assesses the potential to disturb wetlands and issues related to the staging area that could have an adverse impact on the environment, and devise controls to avoid or minimize our operational impact.

At each project site, Stormwater Pollution Prevention Plans are implemented to control runoff and prevent erosion. This may require grading a lay-down site, installing perimeter controls that will redirect or absorb stormwater, among additional controls. Stormwater control takes on greater importance when handling and / or stockpiling hazardous materials. When hazardous materials are present, Cashman takes additional precautions to further control water from these areas.

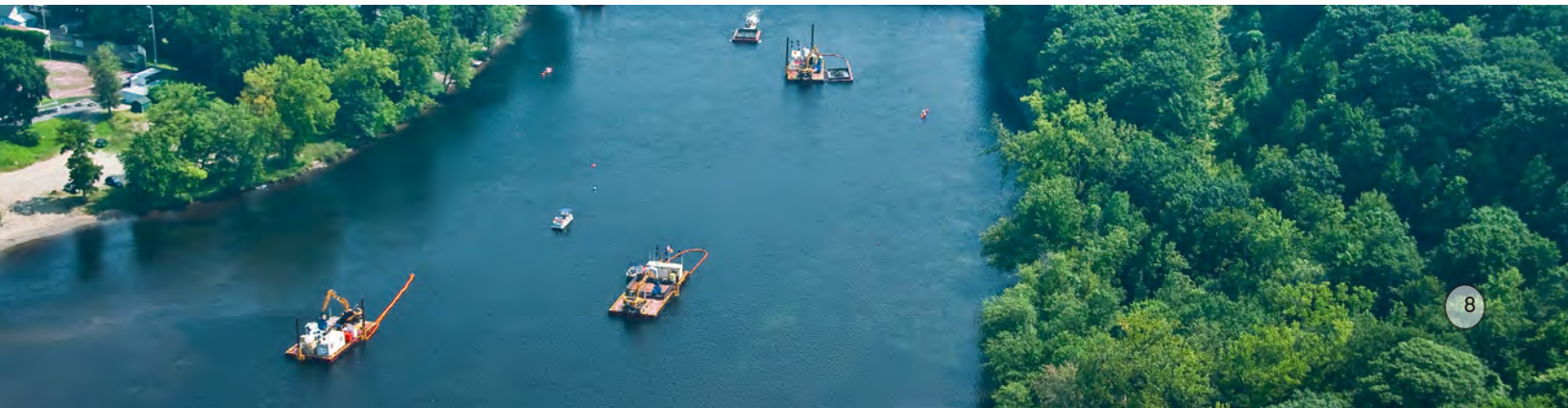
Controlling stormwater is one of many controls in place to maintain water quality. Cashman implements controls related to fuel, oil, or other chemical spills that might contaminate a body of water. The first step in spill control is avoidance, which includes containment tubs for fuel tanks and other similar devices.

Cashman has experience operating on projects with a zero tolerance policy for any type of sheens present on the water. Cashman crews are trained in Best Management Practices as well as the deployment of spill kits, which are kept aboard every manned vessel.

Maintaining water quality within permit requirements additionally requires project teams to maximize the clarity of the water column. This means limiting solids from becoming suspended in the water column. This is achieved using a series of methods and controls that minimize turbidity. Controls include the type of excavator attachment used, silt curtains, and cofferdams.

To further protect the environment, Cashman regularly measures air emissions. Protection of air quality directly impacts quality of life and in some cases may violate regulatory requirements. Cashman avoids air quality issues using controls and methodologies.

Cashman's environmental commitment is present at its headquarters, as well, where many elements of an Environmental Management System are in place. Cashman reduces its carbon footprint through the installation of solar panels, as well as energy conservation and recycling policies within our offices.



QUALITY ASSURANCE & QUALITY CONTROL

Cashman's Quality Policy is rooted in one simple philosophy: *All work meets or exceeds Owner expectations by executing work right the first time, and employing a culture of continuous improvement in all that we do.*

Infrastructure projects turned over by Cashman are guided through a Quality Assurance / Quality Control (QA/QC) Program that accounts for project conditions, industry standards, and federal, state, and local regulating authorities, permit requirements, and any other standards that govern our worksite. Every member of the Cashman team is tasked with seeking ways to improve the quality of our work processes, products, and services.

We achieve quality in all that we do by:

- Developing work plans that match specification and / or plan requirements.
- Achieving client satisfaction by maintaining continuous communications with Owners.
- Eliminating rework by pushing responsibility for quality through every level of our organization.
- Measuring results by monitoring each key project performance criteria and working regularly to improve our performance.
- Striving for continuous improvement in all that we do by using lessons learned and data to improve our work.

By adhering to these primary objectives, Cashman's rigorous QA/QC Program benefits our Clients, Owners, and ourselves.

PROJECT CONTROLS

At Cashman, we understand and live by the adage that "Time is money." In the heavy civil and marine construction industry where daily costs can exceed $100,000, it is paramount that Cashman provide controls over project costs and schedule as they relate to the past, present and future. Project Controls are used to monitor and scrutinize project health and forecasts, as well as to develop improvements to our operations for future, similar projects.

The foundation of Project Cost Controls begins with PROJECT ESTIMATES, in which detailed work breakdown structures relate costs and duration elements for discrete tasks. Accurate estimates provide the basis for successful operations. As a result, Cashman uses HCSS HeavyBid®, an industry-leading software package that provides access to historical company and subcontractor cost information.

Schedule Control is maintained on all sizes of projects and contract types to ensure projects are on pace with performance expectations. Cashman's SCHEDULES present a comprehensive view of project performance, providing visual impacts of time and cost savings related to schedule changes, project modifications, revisions, and other updates.

Integration of cost information, probability analysis, subcontractors, suppliers and third-party activities are all typical components of an overall project schedule. Regularly updated schedules measure our as-bid expectations versus as-built scenarios, as well as resource allocation and performance.

Scheduling functions are typically executed by a dedicated scheduler using Primavera P6 Professional Project Management®. Our scheduler creates baseline schedules that are resource-loading during the bidding and contract execution stages, and maintains as-built durations, resource utilization, and revisions as they are encountered during contract execution.

Weekly and monthly schedule reviews and summary reports are executed and distributed, as required, to Cashman's Project Management and Client Teams. Our scheduling capability, enhanced by personnel and software, enables more informed decisions and provides a better understanding of progress being made against the overall goals of the project.

COST CONTROLS

Cost Controls are an equally important aspect of Cashman's integrated Project Controls. Cost elements of a project, while integrated into our project schedules, have distinct components that are maintained and managed on a daily basis throughout the course of a project.

Cost elements of each project are monitored using Viewpoint® construction software, which provides visibility of our initial budget, cost tracking, purchasing commitments and cost accruals, requests for equitable adjustments, and forecasting.

We ensure that all cost elements of a project—past, present, and future—are accounted for, and regular reports are generated to determine a project's health. Projects undergo regular management reviews to identify potential improvements. Our chosen software suite streamlines our reporting functions and simplifies our ability to make decisions about project improvements, markets, and commodities.

Schedule, Cost and Operational Performance metrics, other media, and data files are all linked together through *CashmanLink*, a proprietary internal reporting system to give Senior Management instantaneous access, updates and feedback on the health of a project from anywhere with an internet connection. Clients or Owners can also be provided with a dedicated project-specific portal to selected information and reporting tools to allow for improved communications / data flow and reporting.

ENGINEERING & DRAFTING SERVICES

The success of any Heavy Civil and Marine Construction project depends on proper design and engineering. Cashman's in-house design and engineering capabilities are focused on safe, cost-efficient, and proven design and engineering techniques related to the constructability of projects.

In-house drafting services utilize the latest versions of AutoCAD and Bentley Microstations to provide detailed models, drawings, and renderings as necessary to support bidding and operations. Drafting revisions and updates over the course of a project, along with as-builts upon completion, are maintained through a document control process. This process allows for a complete history of the progression of a design / drawing package.

Cashman's in-house engineering services are typically limited to construction and installability. To execute Design-Build or Public Private Partnership projects, Cashman works with a select group of third-party Design and Engineering partners. Cashman's Engineering Department maintains licensed professional engineers in a wide variety of disciplines (civil, mechanical, and survey) in several different states along the Eastern Seaboard.

Cashman's Engineering and Design Department has a history of providing innovative solutions to complex problems. Our Engineering and Design professionals provide a combination of backgrounds in design engineering and operations. This allows Cashman to select best practices and design / engineering excellences from a variety of markets, including dredging, oil & gas, heavy civil / marine, environmental, industrial power, and mechanical / electrical. This diversity is one of Cashman's strengths, and allows us to offer Clients and Owners solutions that may not have been apparent to contractors with a more singular focus.

MATERIAL PROCESSING

Cashman lowers overall project costs through highly efficient material processing operations. Material processing solutions are driven by our Clients' objectives, the physical constraints of a work site, and the contaminant profile of the material. Cashman assesses the unique characteristics of each project site, and provides solutions that fit those needs.

Clients that will beneficially reuse material can frequently use passive dewatering techniques such as dewatering through geotextile tubes. Clients that require landfill disposal for materials within the *Toxic Substances Control Act* (TSCA) frequently rely on mechanical means and methods to press material dry to reduce the overall weight, and ultimately the ultimate disposal price. Cashman develops its solution for mechanical processing based on our analysis of disposal costs and transportation fees. In doing so, we optimize the percent solid to provide the most cost-effective solution.

As part of the comprehensive material processing solutions Cashman provides, we own and operate the Cashman Marine Terminal, a full-service, permanent processing facility in the heart of the industrial center of New Jersey. The facility is the first of its kind in the area and offers easy access to various ports, waterways, and Superfund Sites throughout the Northeast.

Cashman is permitted to provide in-barge processing, pugmill processing, and mechanical processing at the facility. We chose the most appropriate method based on the project needs and Client requirements. The Cashman Marine Terminal can accept maintenance sediments from ports and access channels not suitable for Historic Area Remediation Site (HARS) placement as well as impacted sediments such as those from Combined Sewer Overflow (CSO). Additionally, the site currently holds the following permits: Waterfront Development Permit, Air Permit, Water Discharge Permit, and Water Quality Certificate.

It always is our goal to find beneficial reuses for processes materials whenever possible. To date, materials processed at the Cashman Marine Terminal have been used for site remediation, brownfield development, and mine reclamation.

EQUIPMENT RESOURCES

Our expansive fleet of highly specialized hopper, hydraulic, backhoe and clamshell dredges, dump scows, and drilling / blasting equipment is capable of working in any offshore environment, and separates us from the field in this demanding work.

Equipment	Quantity
Heavy Construction (excavators, loaders, material handlers, skid steers)	52
Heavy Equipment Attachments (buckets, grapples, hammers, shears)	74
Cranes: 15 Ton to 150 Ton	11
Cranes: 150+ Tons	15
ABS Barges	14
Deck Barges	32
Dumpscows	5
Hopper Barges	10
Spud Barges	29
Carpenter Barge	1
Vehicles: pickups to OTRs	115
Support Vessels (tugs, skiffs, survey boats)	46
Monitoring: PID, LEL, RAD, survey, GPS blade control	12
Communications: Radios to SAT Coms	60
Welding: 300 amp to digital orbital	41
Other (ATVs, compressors, light plants, threaders, benders)	63
TOTAL	**580**

TECHNICAL CAPABILITIES

At Cashman, we understand that cities and communities, the military, and many municipal agencies depend on modern infrastructure to remain competitive in the global market. It is our goal to provide innovative solutions that minimize the risks and costs associated with improving local infrastructure – on, under, and over water and land.

Cashman provides its Clients low risk and high value on each infrastructure project, whether a large-scale port facility or repairs to a failing seawall. This is achieved by drawing on experience performing projects with complex logistics, production, and structural needs. Cashman's work around the country and the world addresses challenges found in providing high-quality, reliable infrastructure while seeking to reduce costs for Owners.

Cashman studies the specific issues presented by each project to develop solutions during the proposal process. During the preconstruction period, our project management team partners with Clients and design engineers to identify potential issues and develop strategies to overcome them. Issues are overcome by applying technology in new ways, developing innovations, and drawing on past experience and lessons learned to avoid the issues in the first place.

On every project, Cashman seeks innovative ways to improve production while maintaining the Quality standard our Owners expect. For example, Cashman has developed innovative pile-driving templates that ensure accuracy and productivity. We are particularly well-suited to manage any hazardous materials encountered during construction, drawing on significant strength in remediation contracting, and we have access to all required equipment through our affiliate equipment company.

Cashman affiliate, Sterling Equipment, owns a fleet of equipment assets that is among the largest fleets of marine assets on the East Coast and includes floating cranes, deck barges, scows and other support equipment.

From port development through marine-related oil and gas infrastructure projects throughout the Eastern Seaboard, the Caribbean and beyond, Cashman has diversified its abilities, added expertise and equipment, maintained core competencies, and maintained its focus on safety and quality.

MARINE CONSTRUCTION

Cashman is among the most experienced and technically capable marine construction companies in the United States. Cashman self-performs construction services that meet nearly any marine infrastructure need. Our capabilities include pile driving, sheet pile driving, stone work, mooring dolphin construction, marine support for near-shore pipeline tie-ins, derrick services, and solutions for complex marine transportation needs. With additional expertise in demolition, railroad construction, and significant experience constructing bridges, Cashman's in-house capabilities and equipment portfolio provide Owners a single contractor capable of building a wide variety of large-scale infrastructure.

Cashman additionally supports marine operation by fabricating and installing platform structures to support fixed and floating production facilities, pipelines, and subsea systems. Pile driving templates that support production and accuracy are regularly fabricated for Cashman's pile driving projects. Our experience and personnel—coupled with a vast equipment fleet—make Cashman qualified to serve a broad Client base throughout North and South America, and the Caribbean islands.

Cashman's project portfolio includes a mile-long king pile wall that required up to 0.5-inch accuracy and a pile-supported deck pier designed to support 400-foot-tall wind turbines to be placed offshore. We additionally participated in a design-build bulkhead replacement project in Boston that required installation of a new sheet wall waterside of a deteriorating steel bulkhead.

ALTERNATIVE DELIVERY

Cashman's execution of Design-Build (D-B) and Public-Private Partnership (PPP) projects makes us a seasoned partner firm for alternative delivery procurements. Our previous success on D-B projects dates back to 2002, when Cashman successfully won and began construction on the Greenbush Commuter Rail, a $335 million D-B project for the Massachusetts Bay Transportation Authority (MBTA). In all, Cashman has executed D-B projects valued greater than $400 million.

In addition to D-B experience, Cashman negotiated a Public-Private Partnership project in St. Kitts, British Virgin Islands, to construct a new cruise pier for the larger and longer Oasis-class cruise ships.

We continuously seek investment opportunities to create value for our clients. Through our PPP portfolio, Cashman seeks to provide Owners opportunities to achieve goals that may otherwise be unattainable.

PROJECT EXPERIENCE

Jay Cashman, Inc. builds infrastructure that is vital to the economic development of communities around the United States and beyond. Our managers, engineers and operators build quality structures and integrate them into the surrounding environment. We ensure our Clients are able to make the most informed and beneficial decisions possible by working closely with Owners and Engineers during pre-construction phases. Working across a wide range of markets, we ensure Client goals and community needs are met.

Current and recent construction projects performed by Cashman have improved the physical infrastructure in communities and have enhanced local and regional economies. From port development through marine-related oil and gas infrastructure projects throughout the Eastern Seaboard, the Caribbean and beyond, Cashman has diversified its abilities, added expertise and equipment, maintained core competencies, and maintained its focus on safety and quality. Our goal is to deliver quality infrastructure with minimal adverse impact to stakeholders by working closely with Owners and Operators, which include public agencies, private developers, public development entities, and general contractors.

Cashman also plans and executes precise demolition means and methods to remove old infrastructure in order to provide space for new construction or community growth. Working in all facets of the industry and specializing in marine-related infrastructure, we have an impressive experience portfolio that includes several types of infrastructure or facilities, including bridges.

Cashman has more than 250 highly qualified employees that focus on meeting our Customers' needs. We maintain significant financial resources to manage work across various business lines, and we have the capability to bond individual projects valued up to $50 million and aggregate up to $500 million. Cashman's significant equipment and personnel assets enable us to add value to each project we execute.

HEAVY CIVIL AND MARINE SERVICES

Cashman operates in full compliance with all laws, regulations and contractual requirements in each element of our construction work.

Cashman's Civil and Marine Construction Services include:

- Excavation / Earthwork / Dredging
- Facilities Decontamination / Demolition / Dismantling
- Constructability Review / Design Phase Consulting
- Pier, Bulkhead, Wharf and Marine Terminal Construction
- Bridge / Railway / Tunnel Construction
- Pile Driving / Sheeting / Cofferdam Installation
- Stone Work and Structures
- Slurry Walls / Trench Construction
- Land Reclamation
- Disaster Response and Recovery
- Site Restoration

SELECT PROJECTS

- Land Reclamation for America's Cup Event Village, Bermuda
- Pier 1 Structural Repair, *USS Constitution* Berth, Boston, MA
- Spectra Energy / NY-NJ Pipeline Expansion Project, Hoboken, NJ to Manhattan, NY
- New Bedford Marine Commerce Terminal, New Bedford, MA
- Dolphin Construction, St. Kitts
- Long Island Pier, Boston Harbor, MA
- Salem Lateral Pipeline Construction, Salem, MA
- Naval Base Container Terminal (P-I and II), Charleston SC
- Pappas Way Improvements - *Boston Harborwalk,* Boston, MA
- East Cape & Homestead Canal Dams / Everglades, FL
- MOTUS Center Wharf Expansion, Sunny Point, NC
- Cooper River Bridge Demolition, Charleston, SC
- New Cape May Seawall & Shoreline, Avalon, NJ
- North Point Park, Boston-Cambridge, MA
- MBTA Greenbush Commuter Rail, South Shore, MA
- Boston's "Big Dig" Central Artery Tunnel (C/AT 15-A2), Boston, MA
- Boston Harbor Spectacle Island Land Reclamation / Materials Management, Boston, MA

SOUTH BASIN LAND RECLAMATION WORKS
ROYAL NAVAL DOCKYARD BERMUDA

The 9.05-acre reclaimed land was designed and constructed to be the home of the Event Village for the 2017 America's Cup, hosted by Bermuda.

PROJECT INFORMATION

Location: South Basin
Royal Navy Dockyard, Ireland Island
Sandys, Bermuda

Contractor: Cashman Dredging and Marine Contracting Company, LLC

Contract Dates: Aug 2015 - 2016

Dollar Value: $21.2 Million

OWNER INFORMATION

Awarding Authority/Owner:
West End Development Corp. (WEDCo)

OWNER'S AGENT / CONSTRUCTION MANAGER

ACBDA Ltd. / BCM McAlpine Ltd.

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SOUTH BASIN LAND RECLAMATION

ROYAL NAVAL DOCKYARD

SANDYS, BERMUDA

Cashman proposed an innovative design-build (D-B) option for the project at the bid stage, providing nearly $5.0M in savings to the Owner. Through value engineering and ongoing dialogue between the WEDCo and project team, constant evolution of the D-B works led to the most efficient, cost-effective, and environmentally sound installation for this high-profile project. Dredging took four months and construction was completed in six month. The project employed over 25 local subcontractors and suppliers throughout all states of construction.

PROJECT HIGHLIGHTS

- Cashman's responsibilities included relocation of ~140,000 cubic yards of previously deposited dredged material; relocation of over 300,000 cubic yards of fill material imported from Canada; construction of a 1,250-foot splash wall designed by PND Engineers to the south and east of the site; installation of a sheet-piled bulkhead to retain the fill and provide a northern and western boundary to the site; 1,350 feet of concrete pilecap; extension of multiple utilities into the newly reclaimed land; and final site grading.
- A total of 7 shiploads of imported granite were deposited at the South Basin site, brought to Bermuda on the bulk carrier MV *Balder* and offloaded via conveyor belt.
- Installation of over 1,800 steel sheet piles along the perimeter began in February and finished in June, 2016.
- Cashman personnel completed their portion of the project in July 2016.

USS CONSTITUTION PIER 1 STRUCTURAL REPAIRS

CHARLESTOWN, MA

This project will provide a safe mooring for the USS Constitution *as well as safe visitor access to the ship.*

PROJECT INFORMATION

Location:
Charlestown Navy Yard, MA

Contractor:
Jay Cashman, Inc.

Contract No. and Dates:
N40085-15-C-8703
Oct. 2014 – Mar. 2017

Dollar Value:
$14.3 Million

OWNER INFORMATION

Awarding Authority / Owners:
NAVFAC Mid-Atlantic
Norfolk, VA
National Park Service
Charlestown Navy Yard

Owner Contact: Nathan Libby
207.438.1074
nathan.libby@navy.mil

ENGINEER INFORMATION

Project Engineers / Managers:
Fay, Spofford & Thorndike

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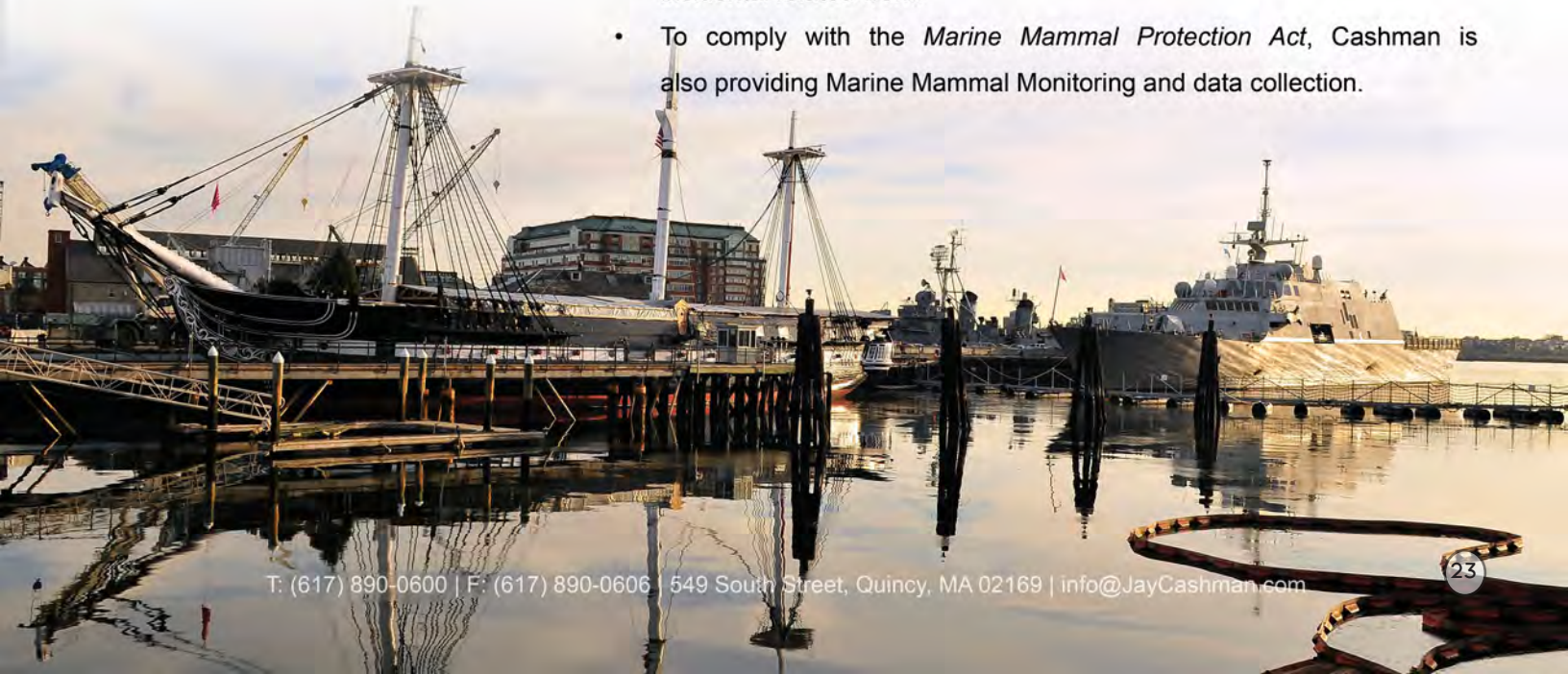
USS CONSTITUTION PIER 1 STRUCTURAL REPAIRS

CHARLESTOWN, MA

PROJECT HIGHLIGHTS

- Jay Cashman, Inc., was awarded this contract for Design/Bid/Build Construction Services for structural repairs to Pier 1, *USS Constitution* Berth, at the Charlestown Navy Yard in the fall of 2014. The ship entered dry dock in March 2015 for a three-year planned restoration.
- The finger pier is comprised of two sections: a steel and concrete section (walkway) and a timber and concrete section (timber pier). There is a fender system for the timber pier to protect it from wear and impact from the camels used to breast the *USS Constitution*. The finger pier requires rehabilitation to regain full function.
- Work includes demolition, removal and disposal of existing site features, hazardous materials, waterfront structures, and utility systems.
- Pier-related work includes construction of a steel sheet pile bulkhead, a pile-supported pier, fender systems, mooring hardware and dolphins.
- Site work includes grading, paving and cobblestone pavement, drainage systems, utility systems (water, electric power, and lighting) landscape features, reconstruction of a section of historic railroad, and incidental related work.
- To comply with the *Marine Mammal Protection Act*, Cashman is also providing Marine Mammal Monitoring and data collection.



NEW YORK & NEW JERSEY PIPELINE EXPANSION PROJECT

Marine support and tie-in for a 30-inch-diameter gas pipeline (Spectra Energy - NY/NJ Gas Pipeline Expansion Project - $900M total value) crossing the Hudson River via Horizontal Directional Drilling (HDD).

PROJECT INFORMATION

Location:
Hoboken, NJ & Manhattan, NY

Contractor:
Sterling Equipment

Contract Dates:
Aug. 2012 - Aug. 2013

Dollar Value:
$40.0 Million

OWNER INFORMATION

Awarding Authority/Owner:
Spectra Energy Transmission, LLC.

PRIME CONTRACTOR INFORMATION

Prime Contractor:
Michels Directional Drilling Corporation

Prime Contractor Contact / Details:

Ted Foltz | P: 920.960.1939

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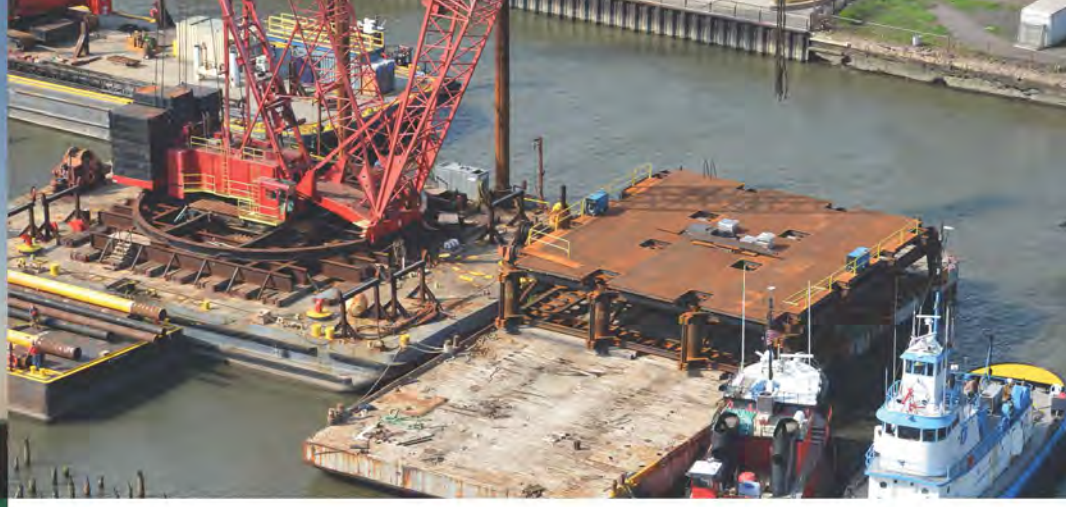

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NEW YORK & NEW JERSEY PIPELINE EXPANSION PROJECT

HOBOKEN, NJ & MANHATTAN, NY

PROJECT HIGHLIGHTS

- Dredging using an environmental clamshell bucket of 10,000 cubic yards (CY) at two pipeline tie-in locations, with backfill after pipeline placement.
- Support of 30" HDD operations from the water due to no land access to the drill site in Hoboken, NJ.
- Close work with the local Transit Authority to assure there was no disruption to the local commuter traffic.
- On-shore / near-shore work areas were close to pedestrian accessways and commuter terminals requiring additional safety precautions to assure there were no interuptions to the 30,000+ people a day utilizing commuter ferries and trains.
- High marine traffic in the Hudson River required constant monitoring of traffic with Port Control.
- Installed 1,800 x 70-ft PZ-13 sheeting and associated falseworks for construction of cofferdam to facilitate sub-bottom pipeline tie-in and backfill.
- Design, fabrication, installation, and removal of a 350-ton marine drill platform supported by 40 x 2.5 x 120 foot piles.
- Pipeline pullback design and execution: pullback / above water tie-in method of 30" gas pipeline facilitating a 100% welded pipeline tie-in.
- Sheet pile cofferdam design construction and removal to facilitate tie-in.
- Marine support during HDD operations.
- Dredging and upland disposal of ~7,500 CY of contaminated dredged material.
- The HDD method, along with the associated drill platform design and pipeline tie-ins, were all innovatively designed through partnering with the prime contractor, owner and subcontractor.

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NEW BEDFORD MARINE COMMERCE TERMINAL

Cashman performed dredging and marine construction to provide a marine terminal capable of handling loads of 4,000 pounds per square inch.

PROJECT INFORMATION

Location:
New Bedford, MA

Contractor:
Cashman Weeks NB
(Cashman a 50% Owner)

Contract Dates:
Mar. 2013 - Dec. 2014

Dollar Value:
$60.0 million

OWNER INFORMATION

Awarding Authority/Owner:
Massachusetts Clean Energy Center

Owner Contact / Details:
Bill White | P: 617.315.9355 |
Email: bwhite@masscec.com

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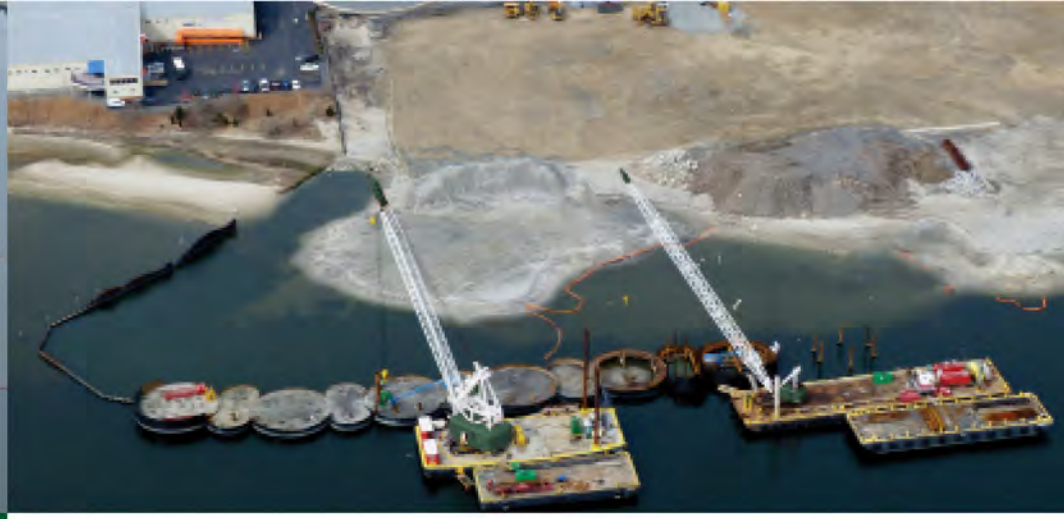

CASHMAN

NEW BEDFORD MARINE COMMERCE TERMINAL

NEW BEDFORD, MA

The Marine Commerce Terminal in New Bedford is a multi-purpose facility designed to support the construction, assembly, and deployment of offshore wind projects, as well as handle bulk, break-bulk, container shipping and large specialty marine cargo. The first of its kind in North America, the Terminal has been engineered to sustain mobile crane and storage loads that rival the highest load-bearing ports in the nation.

PROJECT HIGHLIGHTS

- Provided 910,000 cubic yards of dredging, including clean-up of 250,000 cubic yards of PCB-contaminated sediment.
- Constructed a CAD Cell requiring 350,000 cubic yards of dredging.
- Dredged to -32 feet into rock in front of new bulkhead.
- Mined 250,000 cubic yards to deepen the berth for reuse within the new constructed containment wall.
- Conducted drilling and blasting for 25,000 cubic yards of rock.
- Installed 13 major cofferdam bulkhead sheetpile cells with 60-ft diameters.
- As part of the state's *Fish Deterrent Plan*, Cashman placed a series of engineered barriers to lessen detrimental effects to fish by excluding them from a proposed work area. Barriers included a fish weir, silt curtain, and bubble barrier.
- Managed installation of 1,000 feet of linear bulkhead and wharf, covered by 6,000 cubic yards of cast-in-place concrete.

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DEEP WATER PORT DOLPHIN CONSTRUCTION
ST. KITTS

Cashman was contracted to provide construction of a breasting dolphin as part of the St. Christopher Air and Sea Ports Authority's (SCASPA) long-term strategy to further develop and modernize the cargo port at Bird Rock in St. Kitts.

PROJECT INFORMATION

Location:
Bird Rock, Basseterre, St. Kitts

Contractor:
Jay Cashman, Inc.

Dollar Value: $1.0 million

OWNER INFORMATION

Awarding Authority/Owner:
St. Christopher Air and Sea Ports Authority (SCASPA)

Owner Contact / Details:
Mr. Ludel Harvey, Chief Marine Pilot
harveylharvey@yahoo.com

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DEEP WATER PORT DOLPHIN CONSTRUCTION

ST. KITTS

Jay Cashman, Inc. was contracted by the SCASPA to support its long-term strategy to further develop and modernize the cargo port of Bird Rock to accommodate larger cruise ships visiting St. Kitts and Nevis.

PROJECT HIGHLIGHTS

- Cashman Dredging was contracted to provide construction services including driving 17 piles into the seabed to gain compression strength and to provide a platform to cruise ships that were larger than the then-current berth at the cargo port, for breasting and mooring.
- The infrastructure was designed so the dolphin could still be used as a breasting dolphin once the Bird Rock pier was developed and expanded.
- Because the area was extremely busy, Cashman worked with SCASPA to advise mariners to stay 100 feet away from the construction areas.
- Cashman conducted the pile driving into bedrock depths; welding and testing of piles; and cutting of steel.
- Work was completed in time for the spring 2014 cruise season.

LONG ISLAND PIER
BOSTON HARBOR ISLANDS
BOSTON, MA

Completing a process begun in 2002 to expand public access to Long Island, Cashman was responsible for the construction of a permanent pier on this Boston Harbor island.

PROJECT INFORMATION

Location:
Long Island
Boston Harbor, MA

Contractor:
Jay Cashman, Inc.

Contract Dates:
Jan. 2008 - June 2008

Dollar Value:
$3.7 million

OWNER INFORMATION

Awarding Authority / Owner:
The City of Boston

Owner Contact / Number:
Angus Leary / 617.828.5951

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LONG ISLAND PIER BOSTON HARBOR ISLANDS

BOSTON HARBOR, MA

PROJECT HIGHLIGHTS

- Both concept and initial design were performed by Jay Cashman, Inc.
- The 455 foot-long pier was constructed from Inverset slabs recycled from Boston's Big Dig.
- Entire pier clad with IPE wood.
- Cashman drove fifty-four 18-inch piles and installed all structural steel headers and bracing.
- Assembled decking members, applied IPE cladding and attached utilities to pier sections in yard while piles were being driven.
- Entire job completed on schedule in three months.

SALEM LATERAL PIPELINE PROJECT

SALEM AND BEVERLY, MA

This project supports the construction of ~1.2 miles of a new lateral gas pipeline and a new metering and regulating station.

PROJECT INFORMATION

Location:
Salem and Beverly, MA

Contractor:
Jay Cashman, Inc.

Date:
May 2015 – Nov. 2016

Dollar Value:
$1.9 Million

OWNER INFORMATION

Awarding Authority / Owners:
Spectra Energy / Algonquin Gas

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SALEM LATERAL PIPELINE PROJECT

BEVERLY AND SALEM, MA

This project supports the construction of ~1.2 miles of a new lateral gas pipeline and a new metering and regulating station. The project will deliver natural gas supplies for the planned Footprint Power Salem Harbor Station facility and includes construction of a new metering and flow regulating station within the Salem Harbor Designated Port Area.

PROJECT HIGHLIGHTS

- Cashman's role in the project involved hydraulic dredging of an 85' x 55' area of the seafloor to a depth of -8.5 feet in Beverly Harbor.
- Approximately 1,500 cubic yards of sediment were excavated and placed in hopper barges for temporary storage / decanting. Decanted materials were placed back into the cofferdam.
- An 8'x10' permanent concrete vault was installed below the seafloor in order to conduct future internal inspections; upper elevation of this vault will lie ~1 foot below the existing seafloor elevation.
- The project also included wetland protection and stragegies to deal with local Essential Fish Habitat (EFH) for various species and life stages.

CHARLESTON NAVAL BASE CONTAINER TERMINAL, PHASE I-A

This project is part of the overall plan to construct a new port facility on the south end of the former Charleston Naval Base in North Charleston. The construction of this facility is a portion of the modernization plan to increase the Port of Charleston overall capacity by 50 percent.

PROJECT INFORMATION

Location:
North Charleston, SC

Contractor:
Jay Cashman, Inc.

Contract Dates:
May 2009 - Dec. 2010

Dollar Value:
$44.0 million

OWNER INFORMATION

Awarding Authority / Owner:
South Carolina State Ports Authority

ENGINEER INFORMATION

Project Engineers / Managers:
Parsons Brinckerhoff / Moffat & Nichol

Engineer Contact / Details:
Edward Weber, PE / 843.576.5921

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CHARLESTON NAVAL BASE CONTAINER TERMINAL, PHASE I-A

NORTH CHARLESTON, SC

This project was part of the overall plan to construct a new port facility on the south end of the former Charleston Naval Base in North Charleston. The construction of this facility was a portion of the modernization plan to increase the Port of Charleston overall capacity by 50 percent.

PROJECT HIGHLIGHTS

- Cashman conducted hydraulic-access dredging of 900,000 cubic yards of material required for sheet pile wall installation.
- Transported dredged materials 8,000 linear feet for upland disposal.
- Installed 3,000 linear feet of king pile wall using 3-foot pipe pile.
- Constructed 2,000 linear feet of cantilevered pile.
- Furnished and installed 500,000 tons of crushed stone and armored rock against the king pile wall.
- Additional work items included clearing and grubbing, minor demolition work and excavation, storm drain systems installation, minor waterline fence relocation, and minor asphalt paving.

CUSTOM SOLUTIONS

- Significantly improved production by placing crushed stone using a 3,000-cubic yard scow instead of using a crane bucket.
- A grid pattern for material placement was developed to ensure 100% coverage.

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CHARLESTON NAVAL BASE CONTAINER, PHASE II

Cashman completed the second phase of construction for a new container terminal at the Port of Charleston, South Carolina.

PROJECT INFORMATION

Location:
North Charleston, SC

Contractor:
Jay Cashman, Inc.

Contract Dates:
Mar. 2012 - Apr. 2014

Dollar Value:
$49.0 million

OWNER INFORMATION

Awarding Authority/Owner:
South Carolina State Ports Authority

Owner Contact / Details:
Edward Weber, PE / 843.576.5921

ENGINEER INFORMATION

Parsons Brinkerhoff / Moffat & Nichol

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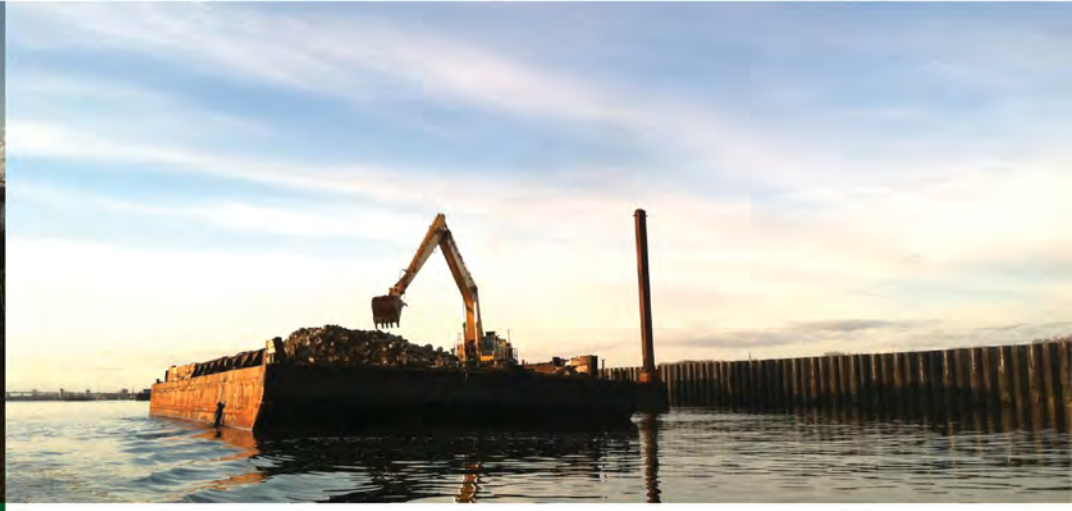

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CHARLESTON NAVAL BASE CONTAINER, PHASE II

NORTH CHARLESTON, SC

This project was part of the overall plan to construct a new port facility on the south end of the former Charleston Naval Base in North Charleston. Cashman completed the second phase of construction for a new container terminal at the Port of Charleston, South Carolina. This work was a portion of the overall modernization plan to increase the Port of Charleston capacity by 50 percent.

PROJECT HIGHLIGHTS

- Excavated and transported ~2 million cubic yards of course sand from the dredge disposal cells at Daniel Island Confined Disposal facility ~2 miles from the jobsite across the Cooper River.
- Placed ~540,000 cubic yards of sand in the tidal area behind the existing 5,000-foot containment structure, forming an 80-foot-wide dike.
- Placed 1.3 million cubic yards of sand in the future container storage area as surcharge material.
- Furnished, delivered via barge, and placed 106,000 tons of underlayer stone and 100,000 tons of granite armor stone for stone dike construction.
- Installed ~5.5 million linear feet of wick drains in the upland area.

CUSTOM SOLUTIONS

- A custom conveyor system arrived on site near the start of the project, which was assembled on barges to load sand materials from Daniel Island.

PAPPAS WAY IMPROVEMENT PROJECT

Completed construction as part of an overall long-term plan to rehabilitate the Pappas Commerce Center (PCC) from an industrial park to a mixed-use urban lifestyle center.

PROJECT INFORMATION

Location:
Boston, MA

Contractor:
Jay Cashman, Inc.

Contract Dates:
Sept. 2012 - Jun. 2014

Dollar Value:
$7.0 million

OWNER INFORMATION

Awarding Authority / Owner:
Boston Harbor Industrial Development, LLC

Owner Contact / Details:
Timothy Pappas / 617.330.9797

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PAPPAS WAY IMPROVEMENT PROJECT / HARBORWALK

BOSTON, MA

PROJECT HIGHLIGHTS

- Completed project design and permitting.
- Constructed a new rock revetment seawall to replace the failed sheetpile bulkhead.
- Rehabilitated the existing rock sloped revetment within the park area.
- Constructed a new pedestrian walkway and bioswale.
- Constructed a new drainage system and stormwater outfall.
- Permitted and designed project alternatives such as construction of a new pedestrian pier and observation platform
- Construction, installation, and commissioning of a wind turbine generator.

EAST CAPE AND HOMESTEAD DAMS REPLACEMENT

Replaced two failed sheetpile wall dams at Cape Sable to stop the follow of sediment material into Florida Bay.

PROJECT INFORMATION

Location:
Everglades National Park, FL

Contractor:
Jay Cashman, Inc.

Contract Dates:
May 2010 - Mar. 2011

Dollar Value:
$6 million

OWNER INFORMATION

Awarding Authority/Owner:
National Park Service

Owner Contact Person:
Matt Kutch

Owner Contact Number:
(303) 969-2481

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EAST CAPE AND HOMESTEAD DAMS REPLACEMENT

EVERGLADES NATIONAL PARK, FL

PROJECT HIGHLIGHTS

- Drove approximately 980 linear ft. of steel sheeting through a layer of lime rock to a depth of 20 ft.
- Completed in-water fill work of approximately 2,200 cubic yards (cy) of limestone sand fill between the bulkheads.
- Placed approximately 2,000 tons of riprap stone around the adjacent land areas along the steel sheeting of the dams.
- Completed over 5,000 plantings at the site.
- Constructed recreational components, channel markers, and mooring buoys.
- Constructed a ramp structure at the end of each bulkhead to provide access for kayaks and canoes.

CENTER WHARF EXPANSION, PHASE 1, MILITARY OCEAN TERMINAL, SUNNY POINT

Expansion of the center wharf at the Military Ocean Terminal at Sunny Point (MOTSU), and upgrade of overall facilities. MOTSU is the largest ammunition port in the country.

PROJECT INFORMATION

Location:
Sunny Point, NC

Contractor:
Cashman Republic (Cashman 50% Owner)

Contract Dates:
July 2008 - Oct. 2010

Dollar Value:
$56 million

OWNER INFORMATION

Awarding Authority/Owner:
U.S. Army Corps of Engineers, Savannah District

Owner Contact Person:
Danny Kissam

Owner Contact Number:
(910) 251-4642

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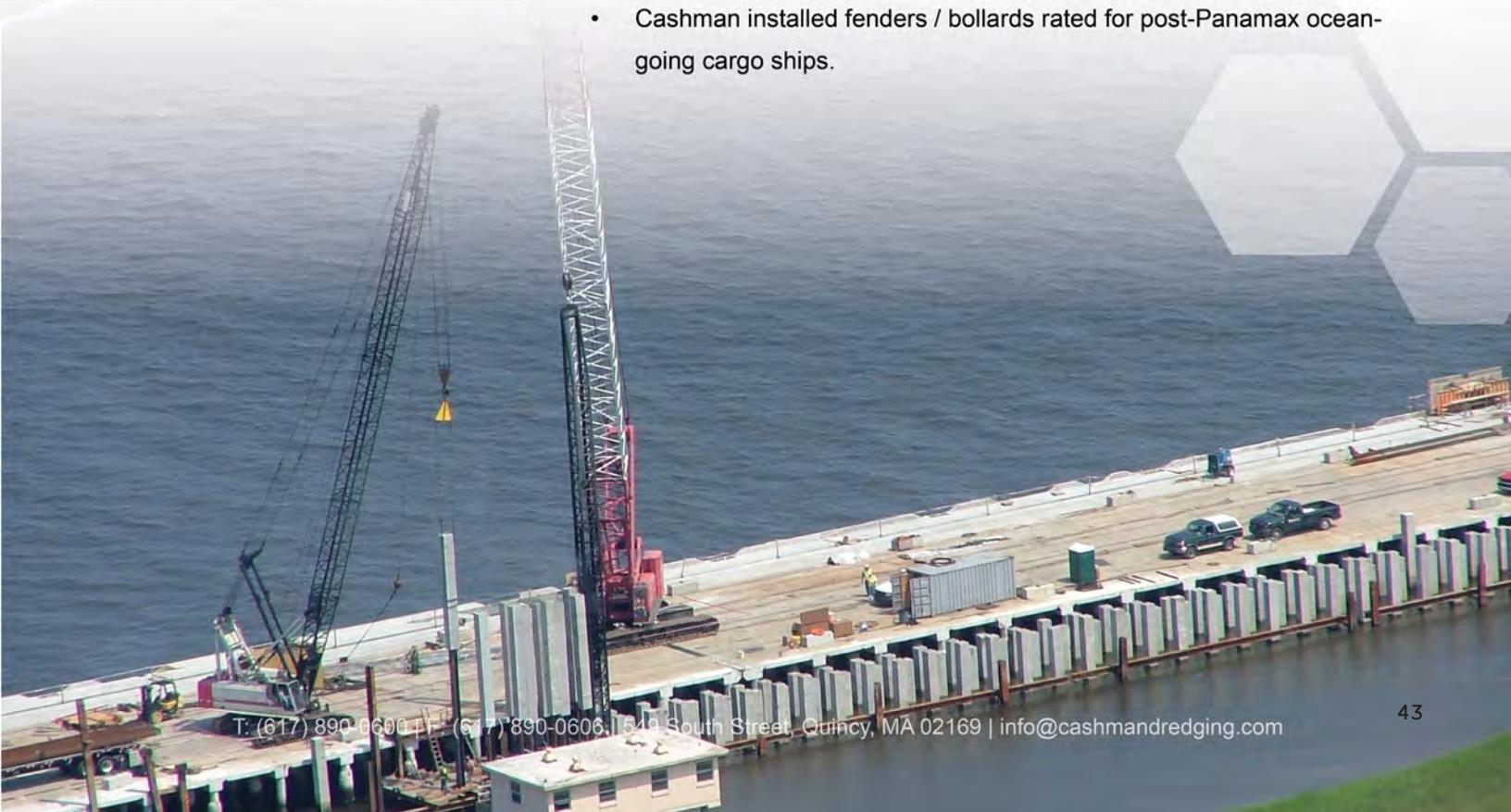
CENTER WHARF EXPANSION, PHASE 1, MILITARY OCEAN TERMINAL

SUNNY POINT, NC

PROJECT HIGHLIGHTS

- Pier expanded 93,000 square feet in a two-year period.
- Significant demolition of an existing structure was required.
- 1,500 24-square inch piles driven in a 9-month period.
- Driven piles composed of steel and concrete 65 feet in length.
- Installation of rail to support three 80-long-ton-rated post-Panamax gantry cranes to handle containerized cargo.
- Installation of 4,000 linear feet of new seaside cst-in-place (CIP) beam.
- Concrete crane beam / slab installed waterside (7,000 cubic yards) and landside (7,000 cubic yards).
- Construction of a 3,000-SF, 2-story superstructure atop the pile-supported deck.
- Cashman installed fenders / bollards rated for post-Panamax ocean-going cargo ships.



COOPER RIVER BRIDGES DEMOLITION

Demolished superstructure and substructure and recycled two 2-mile-long bridges over two rivers.

PROJECT INFORMATION

Location:
Charleston, SC

Contractor:
Cashman - Testa Joint Venture

Dollar Value:
$61 million

OWNER INFORMATION

Awarding Authority/Owner:
South Carolina Department of Transportation

Owner Contact Person:
Leland Colvin

Owner Contact Number:
(803) 737-1308

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COOPER RIVER BRIDGES DEMOLITION

CHARLESTON, SC

PROJECT HIGHLIGHTS

- Removed bridge sections via both explosive demolition and lowering by jacks into barges.
- Used unique equipment to perform all demolition work, including cranes and hydraulic machines on barges.
- Removed foundations removed to final elevation of -65 ft.
- Constructed a 1,250-ft.-long observation pier.
- Reconstructed city streets and installed all new utilities in footprint of the old bridge approaches.
- Provided local neighborhood groups with updates of construction and changes in traffic routes.

CUSTOM SOLUTIONS

- Used optimized techniques to clear the shipping channel following demolition within the allotted 24-hour window to maintain access to Port terminals.

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NEW CAPE MAY SEAWALL AND SHORELINE CONSTRUCTION

Shoreline protection structure built across a one-mile stretch of oceanfront property.

PROJECT INFORMATION

Location:
Avalon, NJ

Contractor:
Jay Cashman, Inc.

Contract Dates:
Aug. 2004 - Dec. 2006

Dollar Value:
$15.0 million

OWNER INFORMATION

Awarding Authority/Owner:
USACE, Philadelphia District

Owner Contact / Details:
Scott Firtzinger | P: 609.569.0135

CASHMAN DREDGING

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NEW CAPE MAY SEAWALL AND SHORELINE CONSTRUCTION

AVALON, NJ

PROJECT HIGHLIGHTS

- Installed 100,000 tons of armor stone.
- Built two layers of armor stone with -6 in. +1 ft. tolerance on slope and crest maintained.
- Installed ~7,000 square yards of marine mattresses.
- Constructed 3,000 feet of seawall.

NORTH POINT PARK REMEDIATION / DEVELOPMENT

North Point Park is a 14-acre park on the East Cambridge waterfront completed in 2007 as part of the Boston "Big Dig" mitigation. Cashman conducted site remediation and restoration as part of the development of this waterfront park.

PROJECT INFORMATION

Location:
East Cambridge / Boston, MA

Contractor:
Jay Cashman, Inc.

Contract Dates:
Dec. 2002 – Apr. 2007

Dollar Value:
$32.0 Million

OWNER INFORMATION

Awarding Authority / Owner:
Massachusetts Turnpike Authority

Owner Contact:
Jack Wright
(With Weston & Sampson since 2012)

Owner Contact:
508.698.3034 | wrightj@wseinc.com

ENGINEER INFORMATION

Project Engineers / Managers:
Bechtel, Parsons, Brinkerhoff (BPB)

CASHMAN

NORTH POINT PARK DEVELOPMENT

GREATER BOSTON, MA

North Point Park is a 14-acre park on the East Cambridge waterfront completed in 2007 as part of the Boston "Big Dig" mitigation. Cashman was contracted to conduct site remediation and restoration as part of the development of this waterfront park.

PROJECT HIGHLIGHTS

- Site remediation / preparation, demolition and removal of existing structures.
- Excavated 100,000 cubic yards including 80,000 cubic yards of contaminated soil / hazardous waste (metals, PCBs, ACM, RCRA and TPH) that was tested, managed, treated and disposed of in accordance with MassDEP regulations.
- Constructed 1,000 linear feet of water feature, including dredging and installation of steel sheetpile wall, liners and riprap used as a cut-off to leach contamination.
- Constructed 2,500 linear feet of H-pile-supported granite seawall and installed 15,000 cubic feet of stone masonry structures.
- Installed utilities, including 24"-72" storm drains, sanitary sewer lines, 8"-16" water lines, and electric and communication utilities.
- Constructed five vehicle bridges, including erecting structural steel and form, and placing 2,000 cubic yards of cast-in-place concrete.
- Constructed roadways (lighting, bituminous paving, granite curb and concrete sidewalks), and installed park improvements (landscaping, irrigation, ornamental railings and playground equipment).

GREENBUSH COMMUTER RAIL PROJECT

Restoration of 18 miles of commuter railroad through several South Shore communities of Boston. This was the first large-scale Design-Build project undertaken by the MBTA.

PROJECT INFORMATION

Location:
South Shore communities of Boston, MA

Contractor:
Cashman Balfour Beatty
(Cashman 50% Owner)

Contract Dates:
Jun. 2002 - Oct. 2010

Dollar Value:
$335.0 million

OWNER INFORMATION

Awarding Authority/Owner:
Massachusetts Bay Transportation Authority (MBTA)

Owner Contact / Details:
James Eng | P: 401.222.4203 x4295

CASHMAN

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GREENBUSH COMMUTER RAIL PROJECT

SOUTH SHORE - BOSTON, MA

PROJECT HIGHLIGHTS

- Over 60,000 SF of slurry placement and 500,000 cubic yards (CY) of excavation.
- Constructed 7 new MBTA stations (platforms, parking, signal and communication systems).
- Built two cut-and-cover tunnel sections, ten railroad bridges, eight highway bridges (including superstructure and substructure placement), and 26 at-grade crossings.
- Used ~40,000 CY of cast-in-place concrete with 5,000 tons of rebar.
- Used ~6,400 linear feet of timber fender for rub rail.

CA/T CONTRACT 15A2 CHARDON STREET TO CHARLES RIVER

Construction of the Chardon Street to Charles River link of I-93 in Boston required building three highway tunnels (two-to-four lanes wide each) directly below the existing elevated highway. The Cashman team supported the existing structure with major underpinners at 19 highway bents on the Central Artery / Tunnel (CA/T) Contract C15A2 for the "Big Dig" in downtown Boston.

PROJECT INFORMATION

Location: Boston, MA

Contractor: Joint Venture: Cashman, Kiewit, Atkinson

Contract Dates: July 1997 - Oct. 2002

Dollar Value: $346 Million

OWNER INFORMATION

Awarding Authority / Owner: MassDOT

Owner Contact / Details: Joe Allegro / 617.951.6000

ENGINEER INFORMATION

Project Engineers / Managers: Bechtel, Parsons, Brinckerhoff

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CA/T C15A2 CHARDON STREET TO CHARLES RIVER

BOSTON, MA

In 1991, after almost a decade of planning, construction began on Boston's Central Artery/Tunnel (CA/T) Project, which removed an elevated highway and created a tunnel system below the city. This tunnel replaced the 6-lane elevated highway built in the 1950s and connected some important areas and highways in the city. The CA/T Project significantly reduced traffic congestion and improved mobility in one of America's oldest and most congested major cities. Cashman completed several Contracts on this Project. Construction of the Chardon Street to Charles River link of I-93 in Boston required building three highway tunnels (two-to-four lanes wide each) directly below the existing elevated highway. The Cashman team supported the existing structure with major underpinners at 19 highway bents on the Central Artery / Tunnel (CA/T) Contract C15A2 for the "Big Dig" in downtown Boston.

PROJECT HIGHLIGHTS

- While maintaining existing daily traffic of +180,000 vehicles overhead, the Cashman team installed ~420,000 square feet of slurry wall and ~2,000 linear feet of multi-barrel tunnel.
- The work was performed beneath the major metropolitan City of Boston and was carefully planned so as to not disturb daily activities.
- Cashman also performed environmental remediation, which included upland disposal of contaminated soil and hazardous waste.
- As part of the project's *Underground Utility Relocation Program* that took place from 1996-1997, Cashman was also responsible for the relocation of three miles of utility lines in Boston and Charlestown.
- The team used the latest applications for preventing damage to Boston's vital subsurface infrastructure.

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LAND RECLAMATION SPECTACLE ISLAND

The major marine/material placement contract associated with Boston's Central Artery/Tunnel Project was cited by ENR as being among the "Best Projects of 1999." Work included barging, receiving and placing material from Boston's Big Dig to transform this former dump into a recreational space in Boston Harbor.

PROJECT INFORMATION

Location: Boston Harbor, MA

Contractor: Joint Venture
Cashman, Kiewit, Perini, Atkinson

Contract Dates:
Jan. 1996 - Jan. 2004

Dollar Value: $160 Million

OWNER INFORMATION

Awarding Authority / Owner:
MassDOT

Owner Contact / Details:
Joe Allegro / 617.951.6000

ENGINEER INFORMATION

Project Engineers/Managers:
Bechtel, Parsons, Brinckerhoff

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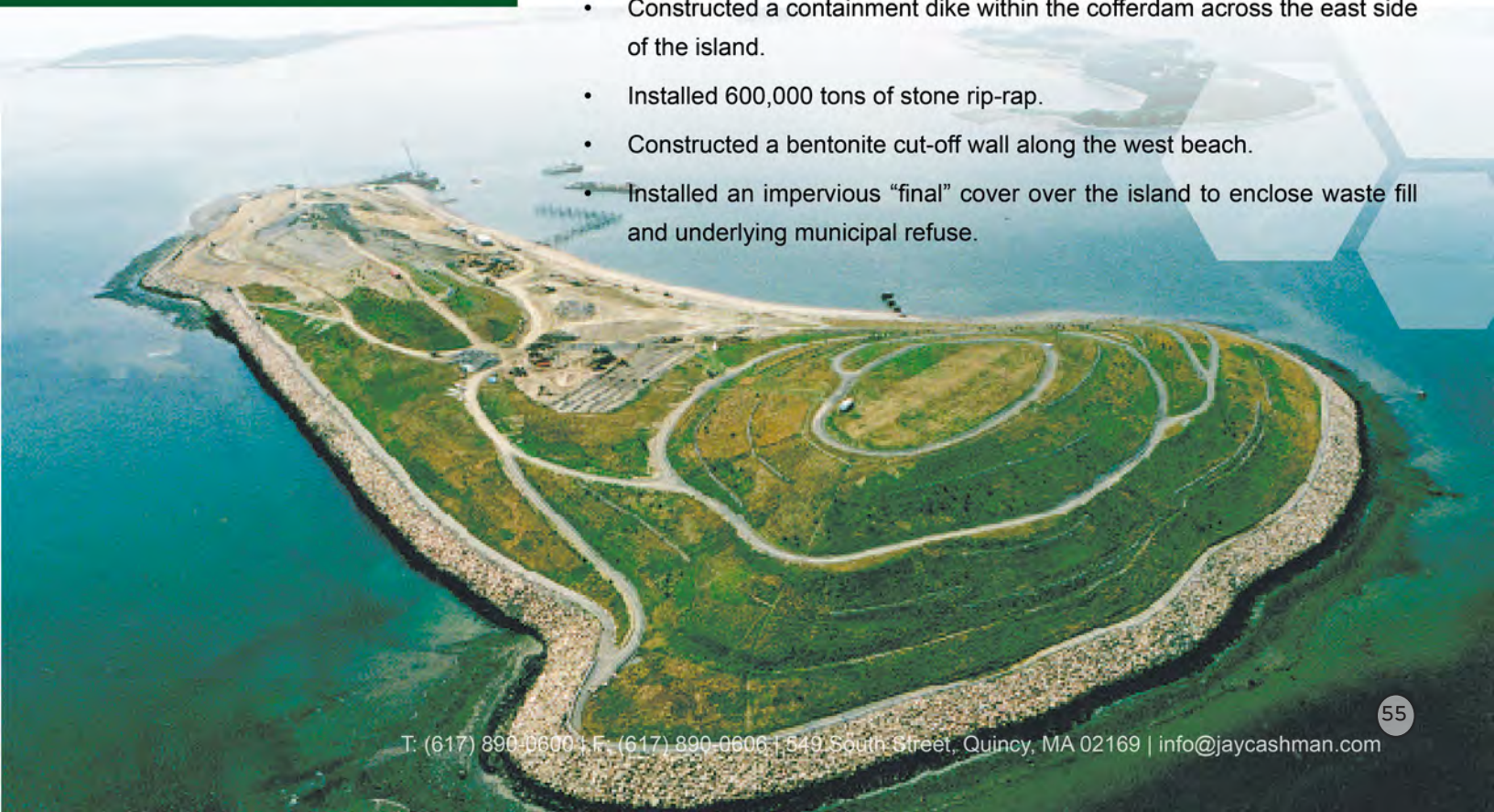
SPECTACLE ISLAND

BOSTON, MA

Spectacle Island has a varied history, and today is a public park, forming part of the Boston Harbor Islands National Recreation Area. When the Central Artery/Tunnel (CA/T) Project began in Boston in 1992, some of the project's excavated dirt and clay was used to resurface the island. The island was covered and built up by dirt, capped with two feet of clay, and covered with two-to-five feet of topsoil. Thousands of trees were planted, and paths, buildings, and a dock were built.

PROJECT HIGHLIGHTS

- Cashman successfully barged, received, and placed 4,000,000 cubic yards (CY) of excavated and dredged spoils from the CA/T project.
- Installed 1,900 linear feet of sheeting (quay wall) along the east side.
- Drove 240 precast piles for 10,000 square feet of concrete pier and seawall on the west side.
- Constructed a containment dike within the cofferdam across the east side of the island.
- Installed 600,000 tons of stone rip-rap.
- Constructed a bentonite cut-off wall along the west beach.
- Installed an impervious "final" cover over the island to enclose waste fill and underlying municipal refuse.



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