

Boardwalk Renovation Enhances Waterfront Town

Rehabilitation features use of durable tropical hardwood.

By Geordie Vining and Ronald S. Headrick

The Peter J. Matthews Memorial Boardwalk and its associated waterfront park have long been the premier civic space in Newburyport, MA. Situated at the mouth of the Merrimack River where it meets the Atlantic Ocean, Newburyport is a city of 17,000 located on the north shore of Massachusetts. Historically a thriving port and ship building center, the city's waterfront has always been the lifeblood of its economy and the focal point of its identity. The waterfront was industrialized in the 19th century, but began to deteriorate badly in the years following the Great Depression.

The 1,100-ft boardwalk was originally built as part of an urban renewal program in the 1970s, reclaiming lands that had been previously used for commercial and industrial purposes. With a central green space known as Market Landing Park, the boardwalk quickly became the centerpiece of the revitalized waterfront. It served the city as both the doorstep to visiting boaters and a center stage for local events. In addition, it was a critical engine for the downtown area's economic vitality. However, a quarter century of weathering and use had taken its toll, and the community recognized the need to upgrade and extend the facility, which dead-ended at both sides in undeveloped lots used for parking.

Funding the \$2.4-million project was an enterprise shared by the public, the city, and the Commonwealth of Massachusetts. A private-sector fund-raising campaign brought donations from hundreds of citizens as well as local banks and other corporate entities, raising about \$250,000. The city received two



From the forests of Guyana all the way to Newburyport, MA, a durable tropical hardwood, Ipe, was used to re-deck the Peter J. Matthews Memorial Boardwalk.

grants from the Commonwealth totaling \$800,000, and the city council approved three bond authorizations that supplied the balance of the funds. After a year of planning and design, 17 months of construction that spanned the difficult winter of 2002-2003, and a variety of challenges at the site that included underground storage tanks, multiple buried utility cables, and a large quantity of urban detritus, the project was completed in summer 2003.

New Tropical Hardwood Decking

The boardwalk was initially constructed using four- by six-in. pressure treated southern yellow pine. After some 30 years of wear, the decking material was nearing the end of its service life. Warped, splintering, and losing strength, it had become a safety concern. The original decking was replaced

with an extremely durable tropical hardwood called Ipe (pronounced "e-pay"). Ipe comes from the forests of Guyana and is known to be resistant to rot, termites, and fire.

Unlike the southern yellow pine, this material is extremely hard and dense, resistant to wear and abrasion, with estimates of its service life running as high as 70 years. The contractor noted that the extreme density of the wood required the blades to be changed a number of times when cutting the wood to size, while one blade is sufficient to cut all the southern yellow pine needed for the project. A single 3-in. by 8-in. by 16-ft plank weighs between 300 and 350 lb, and special handling procedures included the use of a crane to lift and move the material. The original specifications called for the use of five-in. bugle-headed screws, but many of them broke during driving, and seven-in. ring

shank nails were substituted to secure the decking in place. While the cost of Ipe wood is higher than that used in the original decking (\$2.75 per board ft compared to \$1.15 per board ft) it is expected to last more than twice as long, and has the added advantages of an excellent fire rating and the absence of pressure-treated chemicals.

To offset the environmental impacts of harvesting this tropical wood, the city required the timber harvest to be independently certified for compliance with environmental laws, and the city and contractors jointly funded a reforestation program that planted 166 tropical hardwood trees in forests and plantations.

The boardwalk was extended about 150 ft to the east by bridging across a drainage outfall and connecting with the city's commercial fish pier, harbor-master building, and local fishermen's memorial. A 66.25-ft stringer bridge was constructed to span the 30-in. stormwater outfall. The bridge is 23 ft wide and consists of three steel stringers with end and intermediate diaphragms. The landside edge of the bridge is supported by a greenheart timber stringer supported on a combination of concrete pier footings and an existing concrete wall. The bridge deck is made of Ipe timber with a timber curb to match the boardwalk deck. The decking is fastened to a pressure-treated timber sleeper attached to the top of each steel stringer.

A new brick plaza was created at the eastern terminus to integrate all elements into a cohesive space, and the harbor-master building was improved



A single 3-in. by 8-in. by 16-ft plank of the new hardwood decking weighs between 300 and 350 lb.

and made accessible to the handicapped. In addition, a granite-curbed brick walkway lined with lights, benches, and trees, was installed to connect the boardwalk with the downtown area and reflect its unique vernacular materials, character, and scale. It also links

the historic Custom House, now serving as a maritime museum, with the boardwalk by re-routing vehicular traffic, removing a parking lot, and establishing green space that will be used for outdoor maritime interpretation.

The western end of the boardwalk was extended to connect with an existing pedestrian sidewalk, a boat ramp, and a restaurant. A decaying timber bulkhead was replaced with one of steel, and a brick walkway was installed to connect the facility back to the street and sidewalk.

The new extension is about 80 ft by 50 ft. Unlike the existing boardwalk, which is typically 16 ft wide, the western end was designed as an open space that could be used for large groups or gatherings and celebrations and accommodate the flow of traffic around the boat launch and restaurant. Custom-made picnic tables have been made accessible for the handicapped, and a new outdoor sculpture park has been installed where the brick expands at the boardwalk. Concrete pads were installed beneath the brick to serve as bases for sculpture selected by local artists with assistance from the adjacent, non-profit Firehouse Center for the Arts.

Amenities and Pedestrian Ways

Other aspects of the project include the installation of new primary power and water systems to provide shore



New pedestrian walks were installed at either end of the boardwalk, serving as new ways of access to the water.

power and water services for boaters visiting Newburyport at the city's floating docks, which line the boardwalk. In the embayment, the fender piles were repaired and augmented to accommodate tie-up by the city's small fleet of commercial fishing boats in the winter. In addition, a new granite memorial seating area was established, along with a variety of other amenities including new lighting and planters.

While the boardwalk renovations and extensions vastly improve the existing facility, arguably the most improved aspect of the project is the addition of two new pedestrian walks at either end. These new "ways" to the water provide a clearer, safer, and more appropriate route for visitors and residents to find their way to the boardwalk. In doing so, they enhance the city's maritime setting by creating pedestrian access from the downtown area to the Merrimack River. The boardwalk, which requires only general cleanup and trash pickup for maintenance, is owned by the Newburyport Waterfront Trust. Vollmer Associates (www.vollmer.com) was the designer of the project and provided construction oversight. Boston Towing and Transportation's (BTT) Marine Construction Division was the contractor. **GE**

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