The New ASCE Manual 50: Highlights of the Revised Planning and Design Guidelines for Small Craft Harbors

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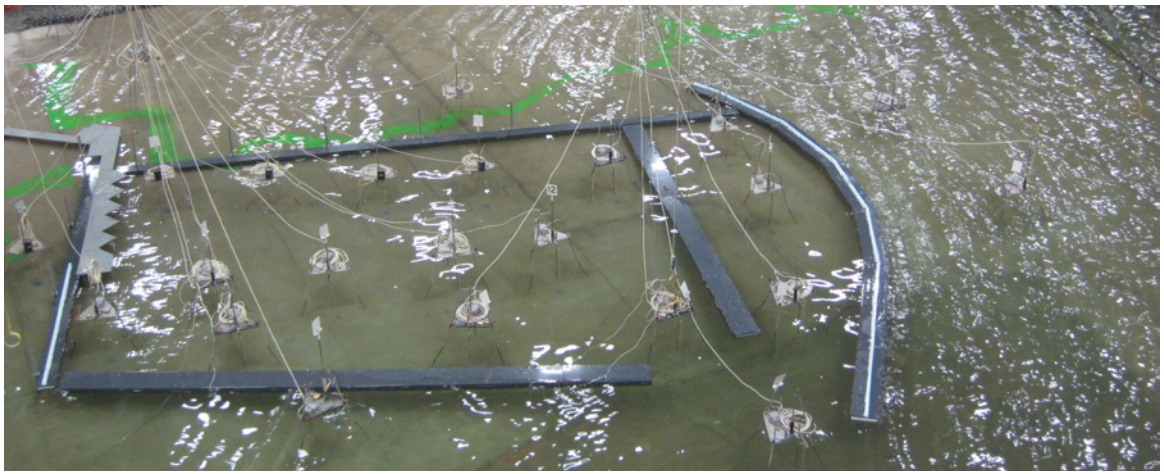
The American Society of Civil Engineers' Manuals of Practice series represents a commitment by ASCE to provide frontline practitioners with practical, peer-reviewed guidance regarding the latest planning and design approaches for the engineering profession. Currently on press and due for release this fall, *ASCE Manual 50 – Planning and Design Guidelines for Small Craft Harbors* is the third edition of a manual first published in 1969 and revised in 1994. Written by a committee of national and international experts in coastal engineering and waterfront design, the changes in the latest edition reflect a number of important trends and changes in small craft harbor design. While many of these changes are technical in nature, a number of the most significant changes address the expanded leadership role that civil engineers are being asked to play in the holistic, interdisciplinary design of environmentally and economically sustainable harbor and marina developments.

Much has changed in marina development and operation since the previous edition, and new challenges confront those charged with providing access to oceans, lakes, and rivers by recreational and commercial users. Construction and mainte-

Floating docks and marina administration building, Clarksville, Tennessee



Physical hydraulic modeling of a floating wave attenuation system

nance of marinas and waterfront facilities have not kept pace with demand. Products are available now that are more predictable and cost-effective. And, increasingly, available waterfront development sites are often blighted or contaminated. This manual will assist those involved with waterfront development to produce facilities that are convenient, attractive, and safe, as well as to meet aesthetic, social, and cultural goals. Topics include: planning, environmental, and financial considerations; harbor entrance, breakwater, and basin design; inner harbor structures; and land-based support facilities.

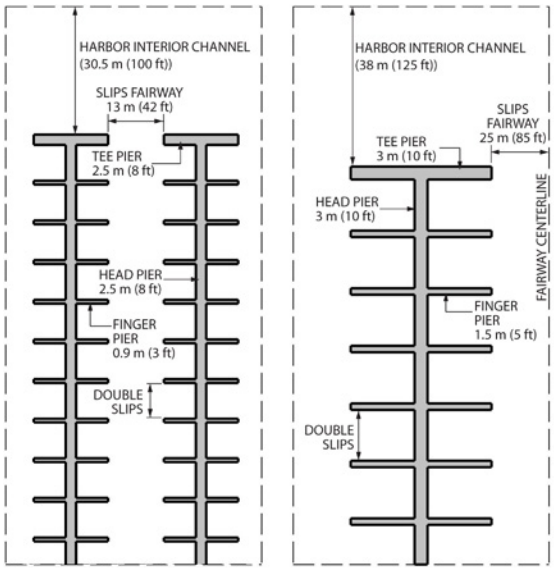
Synthesis of economic/financial analysis as part of an integrated planning process

The second (1994) edition of *Manual 50* covered economics and finance in a separate chapter. This third edition synthesizes these economic and financial considerations into the overall physical and environmental planning framework covered in chapter one. The result is a more integrated and holistically sustainable process for small craft harbor design.

This kind of integrated, interdisciplinary process reflects planning and design principles that are being increasingly emphasized nationally and internationally, including Ecosystem-Based Management (EBM) and Coastal and Marine Spatial Planning (CMSP). While *Manual 50* does not advocate for a specific methodology, it emphasizes the benefits of a process that is data-driven (utilizing an evidence-based design approach to projects), accounts for economic and social benefits as well as environmental stewardship in its definition of sustainability, and is multijurisdictional as well as multidisciplinary. For example, the new *Manual 50* provides more emphasis and detail on the use of market demand analysis including: supply inventory of competitive facilities, sizes and types of boats and the needs of regional users (including both wet and dry storage), and a projection of net demand, land requirements, project phasing, and pricing/absorption.

Both the public and the private sectors are facing daunting limitations when trying to develop or upgrade expensive harbor infrastructure on their own. *Manual 50* provides an expanded discussion on the options and opportunities afforded by public/private partnership (PPP) approaches, including public assembly of development/redevelopment sites, land leasing for private development, and use of grants to leverage public-oriented infrastructure, shoreline improvements, related park and recreation facilities, and associated economic development opportunities.

Vegetated stormwater buffer between the parking lot and harbor at Egg Harbor Marina



	A	B
Slip Length	7.625 m (25 ft)	15.25 m (50 ft)
Area	0.81 hectare (2 acres)	0.81 hectare (2 acres)
Dockage Area	2,799 sq m (9,176 sq ft)	2,168 sq m (7,110 sq ft)
Dockage Cost = (area x $/area)	$949,680	$511,310
Number of Slips	84	26
Annual Revenue (Rev) = (number of boats x length of slip x rental rate)	$138,600	$121,862
Payback = (number of years @ 6% interest)	9 years	5 years

Economic comparison of payback period for 7.625-m (25-ft) and 15.25-m (50-ft) slips

More detailed design guidelines for berthing areas, navigation channels and breakwater systems

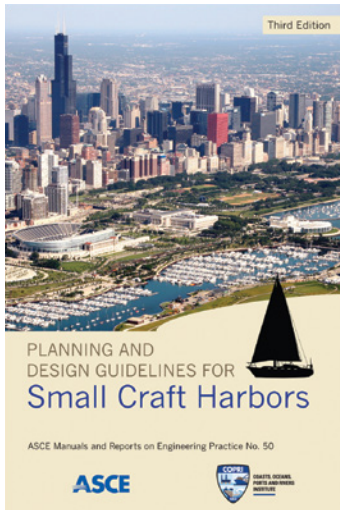
This new edition of *Manual 50* provides the practitioner with valuable information and practical design techniques on small craft maneuvering requirements which can be used for the design of navigation channels and berthing areas. There is also an expanded discussion on harbor tranquility goals and the relationship between risk and the choices an owner makes in harbor protection and dockage systems. All of these factors have a tremendous impact on the program, concept plans and budget of a proposed small craft harbor development project and need to be considered early on in the design and development process.

The new manual places a greater emphasis on the ecological and water quality aspects of harbor entrance layout, basin geometry and breakwater design. There is also much more information provided on the design of alternative breakwater systems, including floating attenuators and panel wall construction. These approaches to harbor protection are being explored in response to increasing environmental concerns about the ecological impact of the placement of large, bottom-resting coastal structures on the beds of our lakes, rivers and oceans. The latest considerations for sedimentation control systems are also discussed in this version of the guidelines.

Increased emphasis on land-based facilities and site development

Land-based support facilities get their own chapter in the new *Manual 50*, reflecting the vital role that landside planning and design plays in creating accessible, sustainable and successful small craft harbors. This chapter also emphasizes the importance of integrated design for dry-stack facilities, providing an expanded analysis of design criteria and considerations for this less expensive alternative to wet slip construction.

The latest edition of the manual also includes bibliographic links to online resources that expand the informational scope of the publication. The result is a highly useful reference guide that will help civil engineers, architects, planners, marine contractors, real estate developers, and marina owners better understand and address the challenges of small craft harbor design – in particular, the growing emphasis on economic sustainability.



Manual 50 was unveiled at the ASCE National Conference in Montreal at the end of 2012. A group of the manual's authors have since developed and taught a special ASCE short course in marina design at a series of major waterfront conferences, including Ports '13 and Docks and Marinas in 2013, and the IMBC International Marina & Boatyard Conference in 2014.

Fred Klancnik is a former Senior Vice President for SmithGroup, where he led the firm's Campus, Community & Waterfront Practice. He has served as editor and as a primary author for both the second and third editions of ASCE Manual 50, and chairs the ASCE Marinas 2020 Committee. He has also served on the national advisory council for the ASCE Report Card for America's Infrastructure. His projects have received numerous awards, including: Forest Park Recreational Development/ Beach Restoration and the Chicago Lakefront Harbor Framework Plan in Illinois; and in Wisconsin, the Racine Harbor Redevelopment, the Milwaukee Downtown Lakefront Revitalization, and the Concordia University Lakefront Enhancement, which was named one of the top five national Outstanding Civil Engineering projects of 2010 by ASCE.