U.S. Coast Guard

Report to Congress on Pier Safety

Twenty-five (25) pages total including this cover

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The Honorable Bill Young
Chairman, Committee on Appropriations
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

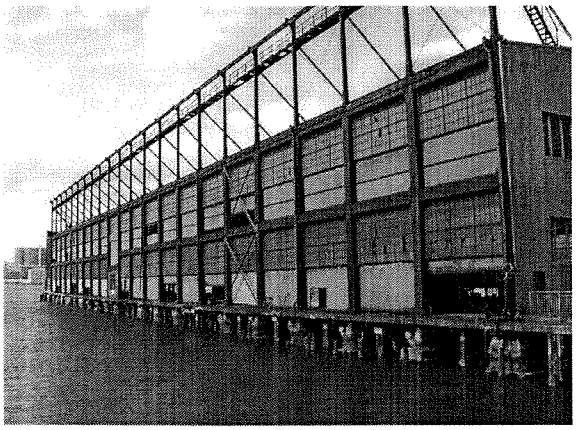
The Department of Transportation and Related Agencies Appropriations Bill, 2003 (House of Representatives Report 107-722) directs the Coast Guard to undertake a study of pier safety, including recommendations for improving pier safety. This letter transmits that report.

An identical letter has been sent to Chairman Stevens. My House Liaison Office at (202) 225-4775 would be pleased to respond to any further questions you or your staff may have.

Sincerely,

Encl: (1) Report to Congress on Pier Safety

United States Coast Guard
Report to Congress on
Pier Safety



Executive Summary

This report complies with the Department of Transportation and Related Agencies Appropriations Act, 2003 (House of Representatives Report 107-722), which directed the U.S. Coast Guard (USCG) to undertake a study of pier safety. This report provides an overview of existing authorities and jurisdiction regarding pier safety standards and enumerates the issues associated with improving pier safety nationwide.

The issues associated with ensuring pier safety are complex, multi-dimensional, and broad in scope. There are significant operational, engineering, environmental, and jurisdictional concerns related to pier safety that vary from locale to locale. With 361 public ports nationwide, there are conservatively many thousands of piers throughout the country, each of varying construction, ownership arrangement, age, and condition. Furthermore, piers are used throughout the nation for a wide spectrum of purposes, from personal recreational use to large-scale commercial port operations.

Given the wide range of variables affecting the design and engineering considerations for structures, building codes and standards have historically fallen under the purview of state and local authorities. This is true for waterfront structures as well. However, in many cases there are no standards for construction and maintenance of piers. Where they do exist, they vary significantly due local variables, such as wind dynamics, tidal actions, geography, soil quality, environmental sensitivity, and usage. These variables and others such as the frequency and quality of inspection and maintenance are important factors in determining the overall safety of a pier.

Currently, no federal agency regulates the design, structural safety, or engineering standards of waterfront piers. The federal role in regulating piers is limited to managing the navigational risk and safety impacts that a proposed pier may have on the nation's waterways and on the environmental impacts of construction and dredging. Such authority is administered by the U.S. Army Corps of Engineers (USACE) and is provided for in both Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act as amended in 1977. The Rivers and Harbors Act prohibits the obstruction or alteration of navigable waters of the United States without authorization from the USACE, which includes the building or modification of a pier. The Clean Water Act regulates the handling of dredge materials. The USACE does not evaluate the adequacy of the design for performing the intended purpose or certify the structural integrity of the pier. The USCG provides input to the USACE regarding the navigational safety implications of a pier or pier modification.

Using information gleaned from researching this issue, the Coast Guard determined that pier regulation could effectively be addressed locally through building codes, maintenance requirements, environmental restrictions, and other local and/or state regulations. Where it is exercised, such oversight can have a significant impact on reducing the risks associated with pier failures. Local oversight of pier construction, maintenance and inspection is the correct approach for mitigating the risks associated with piers and similar waterfront structures due to significant variance in environmental factors such as soils, wind, tides, geography, and neighboring facilities affecting each unique site. A potential model for the local regulation of piers is the one developed by the City of Philadelphia in the aftermath of the Pier 34 collapse. Following the collapse of Pier 34 in 2000, the City of Philadelphia reviewed their oversight of

piers and enacted an ordinance requiring the regular inspection and upkeep of piers and other waterfront structures.

Based upon the information gathered during this study, the Coast Guard offers the following findings:

1. Federal oversight of the design, maintenance, inspection and repair of waterfront structures, including piers and wharves is limited to preventing obstruction of navigable waterways, protecting the environment, and ensuring port safety;
2. There is essentially no data available regarding the frequency, personal or financial cost, and causal factors of pier casualties nationwide;
3. The primary responsibility for setting standards for waterfront structures rests with state and local authorities because of the wide variance in environmental factors and community needs;
4. Not all communities that contain wharves and piers or other waterfront structures have standards in place;
5. The local standards vary in level of detail, degree of enforcement, frequency of required inspections, and remedies for correcting deficiencies;
6. Many local communities have in place mere guidelines in lieu of laws or regulations mandating pier inspections, surveys, and maintenance;
7. In the wake of the Pier 34 casualty, the City of Philadelphia has enacted ordinances that address inspections and surveys of piers and wharves, and implemented mechanisms for compelling owners and operators to make necessary repairs;
8. The use of highly qualified, trained, and experienced underwater inspectors is critical in identifying deterioration and maintenance issues related to piers; and
9. The American Society of Civil Engineers has general guidelines for underwater inspections of structures that could be adopted and/or modified by local authorities in creating ordinances to address pier safety.

The Coast Guard forwards the following recommendations:

1. That local and state governments be encouraged to review the regulatory regime for waterfront structures within their jurisdiction and determine whether appropriate measures have been taken to adequately promote safety of waterfront structures; and
2. Where standards are deemed to be inadequate and such measures are necessary, local authorities should implement a regulatory regime for the construction, maintenance, inspection and repair of waterfront structures within their jurisdiction to reduce the risk of pier collapses and the risk of casualties.

Pier Safety Report

Background: Citing the collapse of Pier 34 on the Delaware River, in the city of Philadelphia, that resulted in the deaths of three people and injuries to several others, the House Appropriations Committee proposed and the Conference Committee, in the Department of Transportation and Related Agencies Appropriations Act of 2003, directed the Coast Guard to conduct a study of pier safety in consultation with the U.S. Army Corps of Engineers. A summary of the Pier 34 incident is provided as Appendix A.

In response to the Conference Committee's direction to study pier safety, the U.S. Coast Guard (USCG) established a Pier Safety Task Force, comprised of officials from USCG Marine Safety and Civil Engineering Program Offices to examine this issue and determine existing authorities and jurisdiction over pier safety standards. The USCG coordinated this effort with the U.S. Army Corps of Engineers (USACE) and actively sought input from external sources, both public and private, to contribute to the development of the findings and recommendations found in this report.

Overview of Federal Authority for Pier Safety

U.S. Army Corps of Engineers: The primary federal authority for regulating and overseeing construction and physical modifications affecting the navigable waters of the United States is the Rivers and Harbors Act of 1899 (hereafter referred to as the Act). Section 10 of the Act as codified in Title 33 United States Code, Chapter 9, Section 403 (33 USC 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. Section 403 of the Act specifically prohibits the erection of a "wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structure" in the navigable waters of the United Sates, without the approval of the Secretary of the Army as delegated to the USACE. USACE promulgated regulations in Title 33 Code of Federal Regulations Parts 320-330 (33 CFR 320-330) detailing the requirements for seeking permission to build or erect maritime structures in accordance with Section 403. Until the 1960's, the primary purpose of the USACE regulatory program was to prevent unauthorized obstructions or alteration of any navigable waters of the United States. However, as a result of amendments to the law, and subsequent court decisions, the regulatory scheme has broadened to include the protection and utilization of water resources, among other issues to advance the public interest.

With the exception of bridges, which are permitted by USCG, all structures located in, on, or over the navigable waters of the United States require a permit issued by the USACE under the authority of 33 USC 403 that is submitted and approved in accordance with 33 CFR 320-330. Water bodies have been designated as navigable based on their past, present, or potential use for transportation for interstate commerce. The applicable definition for navigable waters is defined in 33 CFR 329.4, and reads as follows:

> *"Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity."*

The decision to issue, modify or revoke a permit is based on a public interest review conducted by the cognizant USACE District Engineer. The cognizant USACE District Engineer is charged by regulation to consider all public interest factors in determining whether to approve a permit. The purpose of this review is to ensure that proposed structures will not cause an obstruction to navigation, a negative impact on the environment and are not contrary to the public interest. The USACE does not evaluate the structural integrity of the pier during the permitting process. The USACE permit stipulates that the federal government assumes no responsibility for design or construction deficiencies associated with the proposed structure, and specifically states that the federal government assumes no responsibility for "Damages to the permitted project or uses thereof as a result of other permitted or non-permitted activities or from natural causes".

The USACE permitting process provides for four types of permits:

1. Nationwide Permits;
2. Regional Permits;
3. Letters of Permission; and
4. Standard Permits.

Nationwide Permits and Regional Permits are general permits that do not require public notices. Activities that are generally less complex, are similar in nature to previously permitted projects and have minimal impact may fall under a Nationwide or Regional general permit. An example of general permit activity is the replacement, repair, or construction of a small existing family pier or dock. Letters of Permission and Standard Permits require some degree of public notice and are more individual in nature. Activities that are representative of being covered by these permits include such things as construction of a major commercial pier or expansion of a port.

The following table details the number of permits issued by the USACE from fiscal year 1997 to 2002. However, the USACE does not track permits issued by structure type or modification activity. While not all of these permits relate to piers, a large portion of authorized activities involve piers, and is believed to be a third or more of the total.

Permits Issued by USACE

	FY97	FY98	FY99	FY00	FY 01	FY 02
Nationwide	39,883	41,879	44,913	41,385	37,088	35,768
Regional	38,003	40,404	38,595	40,702	38,759	38,125
Letters of Permission	2,979	2,719	2,687	2,560	3,066	3,258
Standard	4,697	4,855	4,168	3,883	4,159	4,023
Total	85,562	89,857	90,363	88,530	83,072	81,174

U.S. Coast Guard: Some of the issues addressed during the USACE public interest review are of particular concern to the Coast Guard, including the impacts the proposed structure may have on navigability, risks to other waterway users, and protection of the marine environment.

The Coast Guard's statutory basis for managing risk on the nation's waterways is the Port and Waterways Safety Act (PWSA). Specifically, the PWSA requires that the Coast Guard "... take such action as is necessary to prevent damage to, or the destruction of, any bridge or other structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to such waters..." for navigation and vessel safety and enhanced protection of the marine environment.

A June 2000 Memorandum of Agreement (MOA) between the Coast Guard and the USACE provides a mechanism for increased coordination between the two agencies that enables each agency to fulfill its respective statutory obligations. The MOA establishes a formal process for the local USCG Captain of the Port (COTP) to provide input to the USACE District Engineer's review of new permit applications as well as any periodic re-evaluation of existing permits. Successful implementation of the MOA is dependent upon the local COTP and District Engineer working together to establish procedures for communicating concerns and resolving differences. Local coordination is necessary given the relative autonomy of COTPs and District Engineers and to ensure that local concerns are adequately addressed.

Upon receiving public notice of a permit application for a structure or work project from the District Engineer, the COTP conducts an initial risk assessment. The assessment is to identify risks to the safety of the port or waterway, affected by the proposed structure or modification, not the adequacy of the structure itself. Based on the initial risk assessment the COTP may decide to conduct a more formal risk assessment. In any case, the COTP provides input to the District Engineer to identify primary threats to port or waterway safety and actions that may be taken to mitigate identified risks. The USACE factors in this information in their permit award process. The general requirements of the risk assessments are outlined in the MOA, which is provided as Appendix B.

Overview of State and Local Authority for Pier Safety

Existing regulations addressing construction and inspection requirements for piers are enacted at the state or local level and are dependent upon the specific location of the pier. For example, in response to the collapse of Pier 34 in Philadelphia, the City of Philadelphia added provisions to their building and property maintenance codes in June 2002 to cover the regulation of piers and other waterfront structures. Ordinance 020310, a copy of which is provided as Appendix C, amended the Philadelphia Building Construction and Occupancy Code. It added provisions regulating the maintenance and inspection of piers and other waterfront structures.

The Task Force sought to review a representative sample of existing laws and ordinance to gain understanding of the extent of regulation and oversight provided by state and local jurisdictions on the Atlantic and Pacific Coast as well as the Great Lakes region. The limited information available in searchable records revealed a wide range of specificity in local rules. Some specific examples are provided in the following discussion to highlight the regulatory landscape for waterfront structures, as it currently exists. Research of local and state ordnances on the internet revealed an absence of comprehensive requirements for inspection and maintenance of piers and wharves. In general, under the current regulatory scheme, owner responsibility for accidents and casualties resulting from structural failures are mostly likely to be determined through the judicial system.

City of Philadelphia: Philadelphia's provisions require that, with very limited exceptions, the owners of waterfront structures must submit a structural assessment report on a triennial basis. Additionally, it stipulates the qualifications and background of the engineer as well as the team conducting inspections; it specifies the essential contents of an inspection report and the possible actions the City may take under its authority; it establishes a rating system to describe the overall condition of the waterfront structures, using a six-level structural rating system: "Very Good", "Good", "Fair", "Poor", "Serious" and "Critical". Some condition ratings are also associated

with certain timeframes for follow-up actions. For example, piers having a condition of "Fair" must have mandatory repairs completed in nine months; ones with a "Critical" rating means widespread failure is possible and the pier will immediately be closed and barricaded until repairs are completed. If an owner hasn't complied with the requirement of providing inspection reports, the City Of Philadelphia Department of Licenses and Inspections must close the pier until an inspection is completed.

North Carolina: North Carolina requires that one must receive a permit from the Division of Coastal Management (DCM) before constructing a dock or pier. Individuals are suggested to consider four points when building or repairing a dock: The rules and regulations of the North Carolina Coastal Resources Commission, which are administered by the North Carolina Department of Environment and Natural Resources; the rules and regulations of the local government (county or municipality); the environmental impacts associated with the lumber, location, and construction on the shores, wetlands, and waters; and finally, the determination of whether the maintenance of the dock can affect water quality.

There are three types of permits in North Carolina: a general permit, a major permit, and a minor permit. A general permit covers small development projects such as docks with fewer than three boat slips. This permit type is typically needed to construct a single-family residential dock and acts as an expedited form of a "major" permit. A major permit is issued for development projects that require permits from other state or federal agencies; it involves a project that alters more than 20 acres and covers construction of one or more buildings that covers more than 60,000 square feet on a single parcel of land. Finally, a minor permit covers anything other than a major development that has minimal impact on the environment, such as a single family home.

Massachusetts: In Massachusetts, the Department of Environmental Protection (DEP) regulates navigation and public access through the issuance of Chapter 91 licenses, pursuant to the Waterways Regulations in the Code of Massachusetts Regulations (CMR). Massachusetts General Laws Chapter 91, the Public Waterfront Act, requires state authorization for the construction of docks and piers extending below mean high water. The Waterways Regulations include a provision that authorizes municipalities to license non-commercial docks and piers affiliated with residences using a three-step process: designate a local official, establish one formal access point to all water bodies, and direct all fees to waterways. All local permitting programs must be consistent with the Waterways Regulations under Chapter 91. Another consideration is whether the project is located in designated Areas of Critical Environmental Concern (ACEC). Areas that currently lack a comprehensive resource management plan have a moratorium on the licensing of new privately owned docks and piers. Municipalities may develop state-approved municipal harbor plans to customize Waterways Regulations to suit their specific needs.

Florida: When applicable, new construction in Florida must constitute a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act. A new permit must also have compliance with state water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. 1341. Florida stipulates that piers shall not interfere with waterway navigation and that their construction cannot occur over submerged grass beds. The State also forbids bait houses, storage shelters, sun decks, gazebos, screen porches, wet bars, living quarters, or other non-water-dependent structures over state waters or on the pier.

Wisconsin: The State of Wisconsin provides guidelines for local authorities to manage piers and wharves. Wisconsin regulations generally address small projects by private property owners. Under Wisconsin rules, piers, wharves and moored watercraft must be confined to the owner's riparian zone. A waterfront property owner may construct a pier without a permit in a navigable waterway if the following five conditions are met:

a. The wharf or pier does not interfere with public rights in navigable waters, such as fishing access or the protection of fish spawning areas;

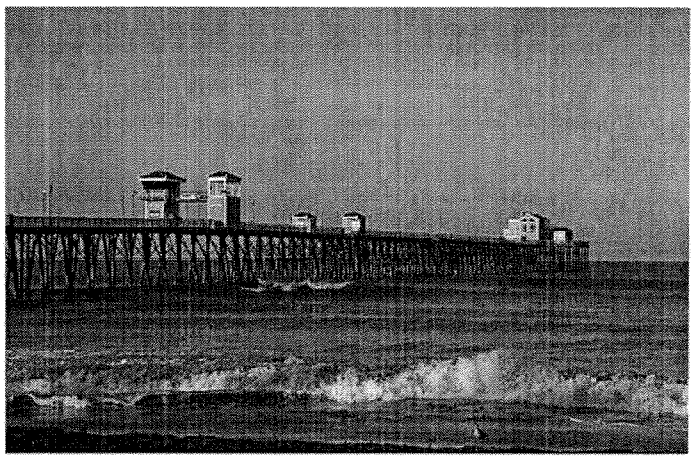
b. The wharf or pier does not interfere with the rights of other riparian proprietors, such as blocking access to a neighbor's shoreline;

c. The wharf or pier does not extend beyond any municipal pier-head line;

d. The wharf or pier does not violate any local ordinances; and

e. The wharf or pier allows the free movement of water underneath and does not cause the formation of land upon the bed of the waterway.

In general, a pier that does not exceed a width of six feet, that does not extend beyond the three-foot water depth, and does not exceed boat density guidelines for the shoreline, will not require a permit. Additional guidelines are contained in the Department's *Pier Planner* brochure. In this document, it is strongly suggested that where the water depth is deep enough, parallel (marginal) piers should be constructed instead of those that are perpendicular to the water.



California: The California Harbor and Navigation Code under California Law requires that any construction or development authorized by this division that also constitutes a project within the definition of Section 10105 of the Public Contract Code, when performed by the state, shall be subject to the State Contract Act. Specific requirements for a new pier or wharf is that it shall not be of a greater width than seventy-five feet, and it may extend to navigable water. A wharf constructed upon any of the navigable rivers, straits, sloughs, and inlets in this State may extend along the shores for a distance not exceeding one thousand feet if it does not obstruct the free navigation of the water on which it is situated. This section does not apply to the waterfronts of incorporated cities or towns.

Role of Owners/Operators in Pier Safety

Owners and operators of piers and wharves are required to comply with local building codes and permitting requirements where they exist as well as the permitting requirements promulgated by the USACE, under 33 CFR 320-330. The requirements are driven by community interest and appear to primarily focus on navigability concerns, waterfront usage restrictions, environmental protection, and access to waterways by neighbors and the public at large. Some ordinances, such as those recently enacted in Philadelphia and similar rules in Seattle, Washington result in the closure of piers when local authorities determine that the structures present a hazard to the public. Substantial research of local and state ordnances on the internet revealed an absence of comprehensive requirements for inspection and maintenance of piers and wharves. Under the current regulatory scheme, owner responsibility for accidents and casualties resulting from structural failures are mostly likely to be determined in the judicial system.

Pier Safety Factors

Casualty Data: Casualty statistics and/or investigative reports related to pier or waterfront structure failures are virtually non-existent. Neither the Coast Guard nor the USACE maintain any casualty data reflective of the rate of occurrences of structural failures or collapse of piers, wharves, or similar structures that were the subject of this study. There exists no body of information, analytical reports, or trend data to demonstrate the number of waterfront structural failures that result from improper design, poor maintenance, natural causes or non-navigation related accidents. Coast Guard investigations of navigational casualties that impact waterfront structures are limited to determinations as to the navigational factors affecting the vessel(s) that resulted in the allision.

Engineering Factors: There are many design variables to consider when constructing a new pier. It is necessary to know the specific function of the pier, the soil conditions supporting the pier, the prevailing weather conditions, as well as the vessel and structural loads the pier is expected to support. In addition, local waterway forces such as current, ocean tides and wave action also influence the design criteria for a safe and useful pier. In some areas, seismic activity must also be considered. The breath of the physical environment stress variables to which piers are subjected, coupled with differing community priorities and standards require building codes to be formulated at the local level. Local standards and environmental conditions drive engineering and structural design criteria, the level of professional plan review, materials used for construction, the frequency of inspection, and the leverage applied by local authorities to ensure owners and operators maintain structures in a safe condition.

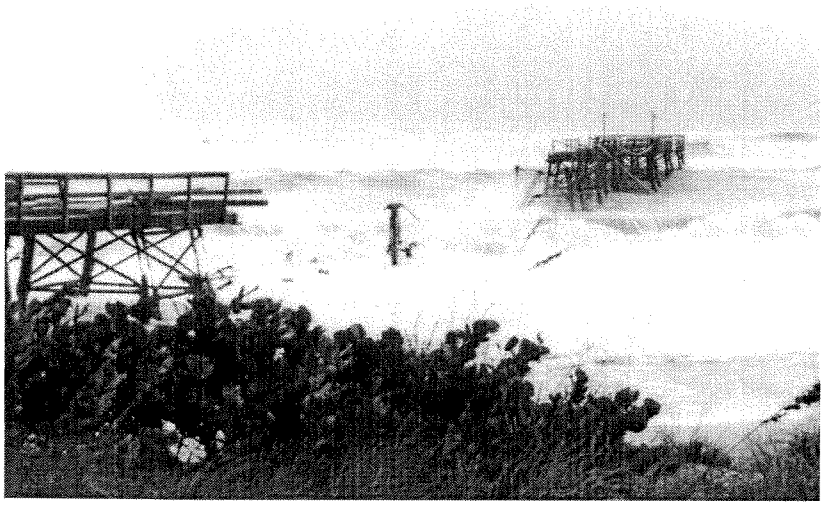
Inspections and Maintenance: Sound engineering practices dictate that inspections and regular maintenance must be conducted on a recurring basis to ensure the safety and sound material condition of waterfront structures, including piers. For example, Pier 34 in Philadelphia was constructed from wood timbers sunk into deep river mud and had been in use for over 91 years. The pier had been inspected following an incident in 1994, in which the west end of the pier collapsed after winter ice damaged the pilings. Professional engineers inspected the pier in 1995 and reportedly identified some discrepancies. However, the extent to which repairs were made to correct the discrepancies identified is uncertain. The Pier 34 incident and similar incidents

may be avoided with proper periodic inspections assessing pier conditions and timely repairs to correct deficiencies identified.

To be effective, inspection of piers must include an underwater inspection of the pilings or concrete supports to ensure the stability of the pier. Some municipalities enforce rules on a local level for inspections and safety standards. Experienced and highly trained engineers and dive teams are crucial to conducting a proper survey of the structure. An underwater inspection by divers is often expensive for piers of commercial value and scale and many pier owners are apprehensive about spending the money for a proper inspection. Routine inspections by experienced divers may benefit owners by detecting deterioration in an early stage, which reduces the risk and cost of delaying action until major repairs are necessary.

Underwater Inspections: Underwater inspections of load bearing structures clearly require properly trained, qualified and experienced inspectors who have a full grasp of structural load paths and redundancies, construction techniques employed in existing structures, and techniques for determining the extent of damage to load bearing members. The American Society of Civil Engineers (ASCE) recognized the need for uniform inspection standards and published the Standard Practice Manual for Underwater Investigations. This manual was written to benefit owners of facilities by ensuring inspectors are technically proficient and efficient, and to benefit inspectors by setting minimum qualification standards, defining condition ratings, and providing guidance for recommending follow-up actions.

The manual defines the different types of inspections that may be required by underwater inspectors and provides guidelines for choosing which type is needed, such as: Inventory, Routine, Damage, In-Depth, Interim and Construction. The manual also helps inspecting personnel to properly determine the appropriate objectives and expectations for each inspection.



Insurance Underwriting: Insurance companies realize that there are no federal regulations in place for pier design and construction. Therefore, companies have set their own standards for insurance premiums based on their research and information. Some of the insurance underwriting considerations include: determination of soil type, development history in the area, structure location in relation to the shoreline and channel, the structure type being built, and other structures in the vicinity. Risk factors identified during the insurance company's investigation determine the cost of the insurance and the type of insurance required.

Findings

Based on the research conducted, the Coast Guard provides the following findings:

1. Federal oversight of the design, maintenance, inspection and repair of waterfront structures, including piers and wharves is limited to preventing obstruction of navigable waterways, protecting the environment, and ensuring port safety;
2. There is essentially no data available regarding the frequency, personal or financial cost, and causal factors of pier casualties nationwide;
3. The primary responsibility for setting standards for maritime structures rest with state and local authorities because of the wide variance in environmental factors and community needs;
4. Not all communities that contain wharves and piers or other waterfront structures have standards in place;
5. The local standards that exist vary in detail, the degree of enforcement, frequency of required inspections, and remedies for correcting deficiencies;
6. Many local communities have in place mere guidelines in lieu of laws or regulations mandating pier inspections, surveys, and maintenance;
7. In the wake of the Pier 34 casualty, the City of Philadelphia has enacted ordinances that address inspections and surveys of piers and wharves, and implemented mechanisms for compelling owners and operators to make necessary repairs;
8. The use of highly qualified, trained, and experienced underwater inspectors is critical in identifying deterioration and maintenance issues related to piers;
9. The ASCE has general guidelines for underwater inspections of structures that could be adopted and/or modified by local authorities in creating ordinances to address pier safety;

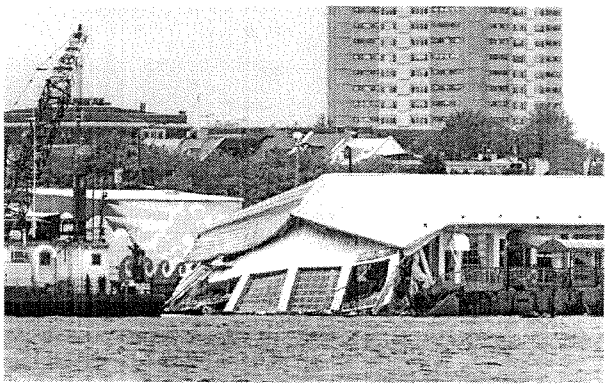
Recommendations

Based on this study, the Coast Guard forwards the following recommendations:

1. That local and state governments be encouraged to review the regulatory regime for piers within their jurisdiction and determine whether appropriate measures have been taken to adequately promote safety of waterfront structures; and
2. Where standards are deemed to be inadequate and such measures are necessary, local authorities should implement a regulatory regime for the construction, maintenance, inspection and repair of waterfront structures within their jurisdiction to reduce the risk of pier collapses and the risk of casualties.

The Collapse of Philadelphia's Pier 34

On May 18, 2000 a large section (over 120 linear feet) of Pier 34 in Philadelphia collapsed, killing three people and injuring 43 others. The victims were attending the opening of a nightclub built at the end of the 91-year-old pier.



Philadelphia's Licensing and Inspection Depart and Police Homicide Units conducted an investigation into the tragedy following the collapse. The investigation sought to determine whether the owners of the pier had received any warnings or inspections reports indicating the dangerous conditions of the pier prior to its collapse. The investigation reportedly revealed that up to 300 piles in the pier were missing or damaged and concluded that the owners should not have opened the nightclub given the condition of the pier.

The Philadelphia District of the U.S. Army Corps of Engineers (USACE) responded to the emergency within three hours of the collapse. They assisted in removing the debris, both to clear the shipping channel and to facilitate divers' search for bodies. On the morning of the 20th, the City of Philadelphia contacted the District for engineering advice on determining the cause of the collapse and on preserving debris as part of an anticipated investigation. Representatives from Operations and Engineering Division of the USACE referred the city to forensic engineering resources in the private sector that could assist the city in conducting an investigation. The USACE dispatched a survey boat to examine a mile-long stretch of the river upstream and downstream of the accident on the following Friday and Saturday to ensure no debris threatened vessels navigating in the vicinity of the incident. In both instances, no obstructions were found.

The City of Philadelphia investigators reportedly theorized that, due to the potentially significant cost of repairs, some repairs may possibly have been postponed. While felony charges against the owners of both the club and the pier were dismissed in June 2002, there are other pending charges, which have yet to be resolved. Additionally, there is a pending civil case

to determine the financial responsibility of the owners to the victims and their survivors. While final determination has not yet been made regarding financial responsibility or criminal charges in this case, it appears that the responsibility for ensuring the safety of a pier is shared by a number of individuals and entities.

Following the collapse of Pier 34, the City of Philadelphia acted diligently to ensure the safety of structures within its jurisdiction by taking immediate measures to address the risks related to piers and docks under its jurisdiction.

Philadelphia Mayor John Street requested that pier owners voluntarily submit inspection reports to the City Department of Licensing and Inspections. Three months after the collapse of Philadelphia's Pier 34, however, approximately 10% of the 79 major piers had submitted the requested inspection reports. This is largely due to the fact that the inspection process is expensive and time consuming; ten owners actually opted to close their piers entirely rather than incur the cost of an inspection. Meanwhile, city authorities realized that there were no standard regulations or building codes applicable specifically to piers enacted by the city. Due to the limited response to the Mayor's request for voluntary inspections, the City of Philadelphia decided that it was appropriate to enact a mandatory inspections requirement for each pier to ensure safety of the public (Appendix B). The new city ordnance requires inspections of piers, bulkheads, wharves, docks, moored vessels and other structures found in the waters of the Delaware and Schuylkill River. Qualified and experienced marine engineers must complete the inspections every three years. Failure to meet this provision results in the pier being declared unsafe and closed to public use.

Utilizing its existing authority to establish local building standards and inspection criteria, the City of Philadelphia took aggressive measures to address the deteriorating conditions of piers within its jurisdiction. By taking these actions, the City of Philadelphia believes that the risks associated with pier collapses will be significantly mitigated and tragic events such as that which occurred on Pier 34 in May of 2000 can be avoided.

MEMORANDUM OF AGREEMENT
BETWEEN THE UNITED STATES ARMY CORPS OF ENGINEERS
AND THE UNITED STATES COAST GUARD

I. PARTIES.

This Memorandum of Agreement (MOA) is an agreement between the United States Coast Guard (USCG) and the United States Army Corps of Engineers (Corps).

II. AUTHORITY.

Under 14 U.S.C. § 141 the Coast Guard may utilize its personnel and facilities to assist any Federal agency to perform any activity for which such personnel and facilities are especially qualified.

The Corps of Engineers must provide notice and opportunity to comment on permit applications pursuant to Section 404(a) of the Clean Water Act and Corps of Engineers' regulations at 33 C.F.R. §§ 320 - 331.

III. PURPOSE.

The purpose of this agreement is to establish a formal process whereby the USCG will provide input into the Corps' evaluation process for issuing permits related to fixed or floating structures, including but not limited to permanently moored vessels and facilities, on the navigable waters, harbors, and rivers of the United States. This agreement is not applicable to the siting of bridges, which is subject to U.S. Coast Guard regulations in accordance with 33 U.S.C. §§ 401, 491, to 507, and 525 to 534. See 33 CFR Subchapter J.

IV. REFERENCES.

1. 33 U.S.C. § 403 Protection of navigable waters and of harbor and river improvements generally subchapter 1--in general Sec. 403.

2. 33 C.F.R. Part 320 General regulatory policies.

3. 33 C.F.R. Part 322 Permits for structures or work in or affecting navigable waters of the United States.

4. 33 C.F.R. Part 325 Processing of Department of the Army permits.

5. 33 CT.R. Part 327 Public hearings.

6. 33 C.F.R. Part 330 Nationwide permit program.

7. *33 U.S.C. §§ 1221 et. seq.* Port and Waterways Safety Program.

8. *33* C.F.R. Part 160 Port and Waterways Safety.

9. Permanently Moored Vessels (PMV), Quality Action Team (QAT) Final Report dated December 7, 1999.

V. BACKGROUND.

1. In the prior decade a series of incidents occurred on the western rivers of the United States which posed a serious risk to passengers embarked on vessels moored on the waterway. These incidents also posed a risk to the safety of persons occupying structures located immediately adjacent to or over the waterway. This provided the impetus to the Coast Guard to review and evaluate its involvement in the permit process related to the siting of fixed or floating structures, including permanently moored vessels and other facilities (hereafter collectively referred to as "structures") and to institute measures for reducing the risk of casualty.

2. One of the key variables contributing to risk is the location of a structure on the waterway. The best time and place to impact that variable is during the permitting process. With the exception of the siting of bridges, which is subject to Coast Guard regulations at 33 C.F.R. Subchapter J, only the Corps has the authority to issue permits related to the siting of structures on the navigable waters of the United States. Further, though Corps permits can be revised or rescinded for cause after issuance, they are generally not subject to regular review or renewal. This MOA lays out a formalized and consistent procedure for USCG involvement in the Corps' new permit evaluation and any re-evaluation review process.

VI. RESPONSIBILITIES.

1. In keeping with current practice, the Corps will continue to forward the public notice of all permit applications related to the construction of structures to local Captains of the Port (COTP) for comment as part of the Corps' permit process. The method for forwarding the public notice will be agreed to by the cognizant district engineer and COTP and may include mail, e-mail or posting on the Corps' homepage.

2. Upon receipt of the public notice of the permit application, the COTP will determine whether to conduct a risk assessment of the site in terms of its safety on the waterway. If conducted, the assessment will use established and documented procedures (see ref. 9) and be completed in cooperation with affected stakeholders, as appropriate. The COTP will notify the Corps within 10 days of the date of the public notice if a risk assessment will be conducted. Subsequently, the COTP will provide the Corps with a recommendation within 30 days of the date of the public notice.

3. The COTP may periodically re-evaluate the risk to structures because of changes in traffic

patterns or after a significant marine casualty or incident in the vicinity. The re-evaluation will be conducted using established and documented procedures (see ref. 9) and in cooperation with affected stakeholders and the public, as appropriate.

4. The COTP will keep the Corps informed of any re-evaluation of the risk to structures at these sites at all times.

5. The Corps will fully consider the COTP's recommendations and proposals in issuing new permits and in considering the need to modify existing permits.

VII. IMPLEMENTING THE MOA

1. Each agency will review its internal procedures and, where appropriate, will revise them to accommodate the provisions of this MOA. Each agency will also designate in writing one senior official who will be responsible for coordinating and implementing the provisions of this MOA.

2. Each agency will designate regional officials to be responsible for coordinating and implementing the provisions of this MOA in their respective regions.

VIII. SAVINGS PROVISION.

Nothing in this MOA alters, amends, or affects in any way the statutory or regulatory authority of the Corps or the USCG.

IX. EFFECTIVE DATE.

This MOA is effective upon signature and shall remain in effect until terminated. Both parties may amend it by mutual agreement and either agency may terminate it with a 30-day written notice.

Signed at Washington, D.C., this 2 June 2000

R. C. NORTH

Rear Admiral, USCG
Assistant Commandant for Marine Safety and Environmental Protection

HANS A. VAN WINKLE Major General, USA
Deputy Commander for Civil Works

City of Philadelphia

City Council
Chief Clerk's Office
402 City Hall
Philadelphia, PA 19107

BILL NO. 020310

Introduced May 9, 2002

Councilmember Mariano

Referred to the Licenses and Inspections

AN ORDINANCE

Amending Title 4 of The Philadelphia Code ("The Philadelphia Building Construction and Occupancy Code"), Subcode "PM" (The Philadelphia Property Maintenance Code), by amending Section PM-304.0 entitled "Exterior Structure" and by amending Section PM-307.0 entitled "Unsafe and Unfit Structures and Equipment" by adding provisions regulating the maintenance and inspection of piers and other waterfront structures, all under certain terms and conditions.

THE COUNCIL OF THE CITY OF PHILADELPHIA HEREBY ORDAINS:

SECTION 1. Title 4 of The Philadelphia Code is amended to read as follows:

TITLE 4. THE PHILADELPHIA BUILDING CONSTRUCTION AND OCCUPANCY CODE

* * *

CHAPTER 4-200 TEXT OF SUBCODES

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SUBCODE "PM" (THE PHILADELPHIA PROPERTY MAINTENANCE CODE)

* * *

CHAPTER 3

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SECTION PM-304.0 EXTERIOR STRUCTURE

* * *

PM-304.9 Piers and other waterfront structures: In order to confirm and maintain the structural integrity of their structures, the owners of piers, bulkheads, wharves, docks, moored vessels, and other structures that have structural elements partly or totally below water along the shorelines of the Delaware River, Schuylkill River, or estuaries shall inspect and submit a structural assessment report to the Department of Licenses and Inspections on a triennial basis with the first report due no later than January 1, 2003. Subsequent reports will be due January 1, 2006 and every three years thereafter. The structural assessment report shall be subject to the provisions of PM-304.9.1 through PM-304.9.6.

Exceptions

1. The reporting requirement shall not apply to pipelines, bridges, dams, utility towers, tram towers, and water and wastewater discharge and intake structures.

2. The reporting requirement shall not apply to vacant piers and other waterfront structures provided:

(a) A barrier to human occupancy is maintained at all points of access from the on-shore side of the pier or other waterfront structure.

(b) The owner files an "Affidavit of Vacant Pier" with the Department of Licenses & Inspections.

(c) The owner maintains a vacant property license.

(d) The pier or other waterfront structure is posted on all sides, in a visible and conspicuous manner, with "Danger-No Trespassing" signs.

PM- 304.9.1 Minimum qualification of inspection personnel: The personnel involved in the inspection of piers and other waterfront structures shall possess the following qualifications:

PM-309. 1.1 Project engineer: A professional engineer registered in the Commonwealth of Pennsylvania shall be designated as the project engineer and shall prepare the structural assessment report. The project engineer shall have at least five years experience in the field of marine structure construction and design techniques with specific verifiable knowledge of relieving platforms, high water structures, and cellular structures.

PM- 309.1.2 Team leader: All underwater inspections shall be led by and under the direction of a team leader who shall be a professional engineer registered in the Commonwealth of Pennsylvania. The team leader shall have at least three years experience in the field of marine structure construction and design techniques. The team leader shall also be a qualified diver or shall use a video monitor to assess and record the divers' inspections.

PM-309.1.3 Divers: Underwater inspections shall be performed by divers who are graduates of a commercial diving school. Divers shall have completed at least 80 hours of instruction specifically related to structural inspections or shall have at least six months verifiable wharf builder experience in the Delaware bay, river, or estuary.

PM-304.9.2 Inspections: The inspections required by this Section shall be classified as follows:

PM-304.9.2.1 Routine inspections: Routine inspections shall be performed and a structural assessment report prepared at least once every three years as set forth in PM-304.9. The inspections shall include:

PM-304.9.2.1.1 Topside inspections: Topside inspection of the above-water portions of the pier or other waterfront structure.

PM-304.9.2.1.2 Underwater inspections: Underwater inspection by personnel qualified to perform such inspections, of those portions of the pier or other waterfront structure that cannot be inspected above water.

PM-304.9.2.2 Post-event inspection: A post-event inspection shall be performed, and a structural assessment report submitted, following a damage-causing event such as impact by vessel, major flood, ice flow, or similar event.

PM-304.9.3 Structural assessment rating system: A rating system conforming to the following criteria shall by used in the structural assessment report to describe the overall condition of the pier or other waterfront structure.

PM-304.9.3.1 Very Good - No visible defects or deterioration observed. All structural elements are sound and performing their function. No repairs are required to accommodate the structure's current use and loading conditions.

PM-304.9.3.2 Good - Localized minor defects or deterioration observed. All structural elements are sound and performing their function. No repairs are required to accommodate the structure's current use and loading conditions.

PM-304.9.3.3 Fair - Moderate defects or deterioration observed. Primary structural elements are sound, however, repairs must be completed in order to accommodate the structure's current use and loading conditions.

PM-304.9.3.4 Poor - Advanced defects or deterioration observed. Overstressing of structural elements observed. The structure or a portion thereof, must be posted with maximum permitted live load certificate(s) and the use restricted until repairs are completed.

PM-304.9.3.5 Serious - Advanced defects or deterioration observed. Overstressing or breakage of structural elements that significantly affects the load bearing capacity of primary structural elements. Localized failure is possible and portions of the structure must be barricaded from occupancy and posted until repairs are completed.

PM-304.9.3.6 Critical - Very advanced defects or deterioration observed. Overstressing or breakage of structural elements has resulted in failure(s) of primary structural components. Widespread failure is possible. All occupancy must cease immediately and the structure barricaded and posted. The pier or other waterfront structure must remain closed until repairs are completed.

PM-304.9.4 Structural assessment report: Structural assessment reports shall be sealed by the project engineer. Each report shall consist of the following sections.

PM-304.9.4.1 Introduction - The introduction to the report shall include:

(1.) Description of the facility including use (function) and loading conditions.

(2.) Scope of work including any limitations affecting inspections dictated by the owner or site conditions.

(3.) Description of the inspection including equipment, test methods, date, time, weather, stage of tide, and the names and qualifications of the survey party.

PM-304.9.4.2 Existing conditions - The existing conditions section of the report shall include the following. Data and results shall be documented

by drawings/sketches and pictures and shall be reported in a factual manner without comment or analysis.

(1.) Results of topside and underwater inspections.

(2.) Special testing accomplished in the field.

(3.) Results of laboratory testing.

PM-304.9.4.3 Evaluation - Evaluate the structure based upon the existing conditions, current use (function), and loading conditions. The overall structural assessment rating shall be included in this section.

PM-304.9.4.4 Recommendations - The report shall contain:

(1.) Recommendations for repairs or replacement including timeframe for completion.

(2.) Restrictions of use, and required posting(s) of live load certificate(s).

PM-304.9.5 Posting, repairs and restricted occupancy: Based upon the recommendations of the Project Engineer, as detailed in the structural assessment report, the following shall occur:

PM-304.9.5.1 Required Repairs (Fair Rating) - Repairs identified by the Project Engineer as necessary to accommodate the structure's current use shall be completed within nine months of the report date.

PM-304.9.5.2 Post Maximum Permitted Live Load Certification (Poor Rating) - Live load certification signs, approved by the Department of Licenses & Inspections, shall be conspicuously posted.

PM-304.9.5.3 Barriers (Serious Rating) - Install barriers and post approved signage to prevent access to specific areas identified by the Project Engineer.

PM-304.9.5.4 Restrict Occupancy (Critical Rating) - Immediately cease operation of any pier or other waterfront structure determined by the Project Engineer to be in critical condition. Post "Danger - No Trespassing" signs on all sides including the on-shore and out-shore sides. Install a barrier to prevent access to the pier or other

waterfront structure from all points of access from the on-shore side.

PM-304.9.5.5 Rating Upgrade - Once repairs have been completed to a pier or other waterfront structure, the Project Engineer may submit an addendum to the structural assessment report to upgrade the load limitations, use, and structural assessment rating.

PM-304.9.6 Submission schedule: Notification of serious or critical conditions and submission of reports shall be in accordance with the following schedule:

PM-304.9.6.1 Should a condition warrant a serious or critical designation, the Project Engineer shall notify the owner, current occupant, and the Commissioner of the Department of Licenses and Inspections immediately. The immediate notice may be oral, but shall in all cases be submitted in writing via certified letter within 24 hours of discovery to the owner, current occupant and the Commissioner of the Department of Licenses and Inspections.

PM-304.9.6.2 Structural assessment reports shall be submitted to the Commissioner of the Department of Licenses and Inspections within sixty days of physical inspection.

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SECTION PM-307.0 UNSAFE AND UNFIT STRUCTURES AND EQUIPMENT

* * *

PM-307.1 Unsafe Structures: All structures that are or hereafter shall become unsafe, unsanitary or deficient because of inadequate means of egress facilities, or which constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or which involve illegal or improper occupancy or inadequate maintenance, shall be deemed unsafe. All unsafe structures shall be taken down and removed or made safe and secure as the code official deems necessary and as provided for in this section. A vacant building that is not secured against entry shall be deemed unsafe. *Likewise, a pier or other waterfront structure shall be deemed "unsafe" pursuant to this section where the owner has not complied with the most recent deadline for performing an inspection and submitting a structural assessment report to the Department pursuant to section PM-304.9.*

SECTION 2. This Ordinance shall take effect immediately.

Explanation:

Italics indicate new matter added.