DCLU

Director's Rule 7-90

Applicant	Page of	Supersedes
CITY OF SEATTLE DEPARTMENT OF CONSTRUCTION AND LAND USE	1 of 4	NA
	Publication 10/1/90	**Effective** 12/18/90
Subject Central Waterfront Piers - Restoration and Maintenance Requirements	**Code and Section Reference** Section 104 Seattle Building Code (Chapter 22-100 SMC)	
	Type of Rule Review Criteria	
	Ordinance Authority 3.06.040	
Index Building Code/Procedural Requirements	**Approved** Dennis J. McLerran	**Date** 12/14/90

Section 104(d) of the Seattle Building Code (SBC) reads, in part, as follows:

3. Central Waterfront Piers. All piers, both existing and new, and all portions thereof shall be maintained in a safe condition capable of supporting the design loads as specified in this building code. The building official shall establish a procedure to require the creation of appropriate maintenance and inspection programs for all piers located within the Central Waterfront Fire District.

RULE:

There is hereby established a Pier Maintenance Program for all wood piers located between West Harrison Street and South Massachusetts Street. A Pier Maintenance Program shall be submitted to DCLU by September 1, 1991. The program consists of an initial survey, a restoration plan, and an ongoing maintenance program as described below. The Program shall be developed and implemented under the direction of a Washington State licensed structural engineer. Subject to the preliminary approval of DCLU, other Washington State licensed engineers may be the lead professional provided they are experienced specialists in the field of pier maintenance and design. The owner of the pier shall be responsible for continuous implementation of the Pier Maintenance Program and the condition of the pier. All Pier Maintenance Programs shall be subject to the approval of the Director of the Department of Construction and Land Use (DCLU).

REQUIREMENTS:

1. General

1.1 Pier Maintenance Program

The Pier Maintenance Program shall be a comprehensive program covering all wood elements which provide structural support of the pier. The program shall address the materials used in the pier construction and include survey, inspection, restoration and maintenance programs appropriate to each structural element. Existing or recent studies or investigations of a pier may be used in the development of the Pier Maintenance Program.

1.2 Pier Closure

Vacant piers and vacant portions of piers which are closed are exempt from the pier maintenance program. The owner of a vacant pier shall submit a letter to DCLU stating that the owner will prevent people from entering the pier and will prevent ships from tying up at the pier. The letter shall also state that the owner understands that a pier maintenance program must be submitted to, and approved by, DCLU prior to any reoccupancy of the pier.

2. Initial Survey Report

A report evaluating the existing condition of piles, pile caps, stringers and decking prepared by a structural engineer shall be submitted to the Department of Construction and Land Use.

Where the condition of piles, pile caps, stringers and decking has not been assessed by inspections within the last 5 years those elements shall be inspected prior to preparation of the Initial Survey Report. Inspections shall be performed by or under the direction of a Washington State Licensed Structural Engineer. Inspections by personnel other than the structural engineer for the pier's maintenance program are subject to the approval of the Department.

The report shall include:

2.1 Qualifications of those performing the inspections if other than the structural engineer. Qualifications shall be approved by the structural engineer and the Department.

2.2 Methods of inspection used. The intent of this rule is not to require specific methods and not to define required extents of inspection. However, the inspection must be sufficient to allow the professional responsible for the report to state that the pier is safe and to recommend repairs or closure when necessary.

Either visual inspection at low tide, sonic, or diving inspection methods shall be used so that the pier can be analyzed to ensure the safety of people using it. As a general guideline, a confidence level of 95% with an accuracy precision of +/- 10% should be satisfactory for an initial pile inspection. In any event, no more than 20% of the piling will be required to be inspected during the initial inspection.

2.3 Method of rating conditions and capacity of piling.

2.4 Plans of inspected piling evaluating their condition and showing their location shall be included. Where known, the report shall include the dates piles were installed and upgraded. Stub piles shall be indicated. In the event the initial inspection uncovers areas that need to be repaired to return the facility to safe condition, additional inspection shall be required.

2.5 Plan of existing caps and stringers evaluating their condition shall be included.

2.6 An engineering analysis of the vertical and lateral load carrying capacity of the existing pier. If the analysis indicates the need to upgrade the pier structure to provide adequate carrying capacity for either the current or proposed use of the pier, an appropriate restoration plan shall be provided as outlined in Section 3, below. The owner may also chose to close the pier, in accordance with Section 1.2, above.

2.7 The report shall include a statement by the engineer regarding the overall safety of the pier, and shall recommend a restoration plan as outlined in Section 3 if necessary.

3. Restoration Plan

Where determined necessary by the initial survey report, a pier repair/replacement plan prepared by the structural engineer shall be submitted to the Department of Construction and Land Use as a part of the Pier Maintenance Program. Detail of the repair or replacement methods shall be provided including methods of repairing deteriorated piles. If some of the work is to be accomplished in phases, the phases and timing shall be identified. Where phased work is planned, the benefits and potential impacts of delayed restoration shall be identified. Owners are not required to bring piers up to present code standards. When repair is required, the pier shall be upgraded to a safe condition.

All repair and replacement work shall be under the direction of the structural engineer of record. Inspection may be conducted by an authorized representative of the structural engineer. If a representative is to inspect the work, that representative shall be approved by the Department prior to the commencement of work.

An engineering analysis of the vertical and lateral load carrying capacity of the pier upon completion of the restoration shall be submitted to the Department by the structural engineer.

4. Ongoing Maintenance Program

An ongoing maintenance program shall be prepared by the structural engineer and submitted to the Department of Construction and Land Use for approval.

The owner shall indicate his agreement to implement the program by signing the document.

The program shall include:

4.1 A copy of the survey report and restoration plan, if not on file with DCLU.

4.2 An inspection monitoring plan identifying the type and sequencing of inspections appropriate to each structural element of the pier. As a minimum, the monitoring plan shall include:

a. Annual "row through" visual inspections of timber piles, and;

b. Every 5 years a comprehensive investigation of piles consistent with Section 2 shall be implemented.

4.3 A report shall be submitted to DCLU by the structural engineer following each inspection. The report shall indicate changes in the condition of the pier and shall update the maintenance plan to address any additional damage or deterioration identified.

5. Permits Required

All structural repairs required as a result of either the restoration plan or maintenance program shall be subject to the requirements of a building permit.

REASON:

With the collapse of various pier sections, including Pier 50 and Pier 51 in 1979-80 and Pier 65 more recently, it became apparent to DCLU officials that pier maintenance must be closely monitored in the future. In 1982, approximately 25 piers from Pier 50 to Pier 70 were inspected and 22 pier owners were cited. Several of those piers were repaired, but others were closed off and remain unoccupied.

The waterfront wood pier substructure (i.e., piling, pile caps, stringers, decking) is exposed to a harsh marine environment that is changing. The effect of the changes in the water environment on the life of piles, especially timber piles, is unknown. Verification of the degree of deterioration is difficult without special effort. In addition, mixed use redevelopment of many existing piers has resulted in a major increase in general public usage when compared to the warehousing or manufacturing occupancies more common in the past.

Therefore, because of (1) the changing environment and its unknown impact on pile deterioration, (2) the increase in public usage, and (3) the difficulty for City Inspectors to see problems with a quick visual inspection, a specific pier maintenance program is needed.