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SECTION 8

SUMMARY OF EVALUATIONS

The Port of San Francisco Embarcadero Historic District appears eligible for the National Register of Historic Places as a district under criteria A, B, and C. It is significant under criterion A in the area of Government at the state level of significance for the period 1878 – 1946. The district is significant in the areas of Commerce and Transportation at the National level of significance for the period 1878 – 1946 and Labor at the national level of significance for the period 1934. The district is significant under criterion B in the area of Labor, at the national level of significance , for the period 1934, for its association with Harry Bridges, a labor leader. The district is significant under criterion C in the area of Engineering at the national level of significance, for the period 1878 - 1946, in the area of Engineering, as an example of a type of port. The district is also eligible under criterion C in the areas of Architecture and Community Planning and Development, for the periods 1898 - 1903, 1912 - 1938 and 1878 – 1938, at the local level of significance. Although the Period of Significance varies according to the areas of significance within the criteria. The most inclusive period is from 1878, when construction began on the seawall, to 1946 when shipping activity declined dramatically after World War II. The district possesses a substantial degree of integrity in all seven aspects of integrity..

The Port of San Francisco Embarcadero Historic District meets the definition of a district in several ways. Paraphrasing *Bulletin 15*, it possesses a significant continuity of buildings and structures united historically and aesthetically by plan and physical development. The district developed on a plan associated with redesign of the seawall whose construction began in 1878. The seawall was built from 1878 to 1915, the Ferry Building was built from 1896 to 1903, and the wharves, piers and other features of the district were built from 1908 to 1938. Most of the piers are decorated on the inshore and outshore ends according to a consistent scheme. While many of the piers have been demolished or destroyed since the 1950s, the port is still experienced both from the land and the water as a single district, largely because of the unifying presence of the curving line of the seawall. The experience of the district as a single entity is enhanced by the knowledge that the port of San Francisco is a rare surviving example of a once common type of port.

CRITERION A

GOVERNMENT

Significance

The Port of San Francisco Embarcadero Historic District is eligible for the National Register of Historic Places under criterion A at the state level of significance in the area of Government for its association with the Board of State Harbor Commissioners, an agency of the State of California. The physical features of the district — the seawall, the bulkhead wharf, the Ferry Building, the piers and sheds, the small restaurants, and various other buildings and structures — were all built by the efforts of the Board of State Harbor Commissioners and its staff. In addition, the Board and the staff were housed in the district — in the Ferry Building, on the bulkhead wharf, and on the piers. The physical features of the district represent the achievements of a government agency that was important for managing the operations of the port, facilitating its success as a commercial and transportation hub, accommodating the needs of shipping companies and numerous types of waterfront labor, designing a great variety of physical facilities including their architectural imagery, contracting for the construction of most of its facilities, and maintaining its facilities with its own staff. The district is significant at the state level because San Francisco was long the principal port for a large part of California and because the Board of State Harbor Commissioners was established by the state legislature to undertake functions with significance to the economy of the whole state of California.

The Board of State Harbor Commissioners was created by the state legislature in 1863 to straighten out the chaotic conditions at the port of San Francisco, to develop facilities, and to administer the port. First of all, the board was created to build a seawall. The beginning of phased construction of the second seawall in 1878 marked the beginning of the permanent port of San Francisco. Once the location of the seawall was established and construction was under way, the Board of State Harbor Commissioners built, rebuilt, and maintained piers up and down the waterfront. To serve the piers and link them with commercial warehouses and railroads, the Board of State Harbor Commissioners built the Belt Railroad, beginning in 1890. For its own offices, for rental income, and to serve the heavy ferry traffic on San Francisco Bay, the Board of

State Harbor Commissioners built the Union Depot and Ferry House (the Ferry Building) during the years 1895 to 1903. After the earthquake and fire of 1906, the Board of State Harbor Commissioners developed a plan for reconstruction of its piers and wharves with modern materials and facilities. The bulkhead wharf and all of the port's piers were rebuilt, mostly in reinforced concrete, from 1908 to 1938. The Belt Railroad was completed in 1914. The seawall was completed in 1915. Together with the second seawall and the Ferry Building, these features — all built under the Board of State Harbor Commissioners — constitute the major elements of the historic district.

The Board of State Harbor Commissioners built the port under terms defined by the state legislature. Under those terms the port was self-supporting — it built what it could afford from each year's revenue, derived from rents and from fees charge to users of the port. Occasionally these revenues were augmented by the sale of bonds for improvements.

The Board of State Harbor Commissioners consisted of a three-member board, appointed by the governor. The board was supported by a staff that included an engineering department which designed the port's facilities; a wharfinger's department which controlled shipping and collected fees; a Belt Railroad department which built and operated the Belt Railroad; and a maintenance department which performed the unending task of maintaining the piers and other structures of the port. Among the many employees of the port were professional engineers, clerks, and a large number of maintenance workers including pile drivers, carpenters, painters, and electricians.

The size of the staff grew from about 200 in 1899 to over 500 in the 1950s. The main offices of the Board of State Harbor Commissioners were in the Ferry Building beginning in 1899, with the large majority of its employees, including wharfingers and maintenance employees located on the piers and the bulkhead wharf up and down the waterfront.

Just as the Board of State Harbor Commissioners made constant changes to its facilities to keep up with changing conditions, so it also made many changes in its administrative organization. In the period 1910-1912, the staff was purged of workers beholden to the Southern Pacific Railroad. In 1913, the board adopted civil service procedures for employees. The board established a series of advisory groups representing ship owners, merchants, labor and other interests to help

respond to ever-changing conditions. The staff was active in professional organizations and visited other ports to keep current on the latest developments. During the Depression, the board reorganized its staff and formed relations with the Public Works Administration (PWA) to cope with difficult times. During World War II, the board managed the port almost exclusively for military needs.

The Port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion A for its association with "a pattern of events. . . that have made a significant contribution to the broad patterns of our history." (United States Department of the Interior *Bulletin 15* 1991:12) in the area of Government. The district is significant as the product of its administration by the Board of State Harbor Commissioners, a state agency. During the period of significance, from 1878 to 1952, the Board of State Harbor Commissioners oversaw the construction of all of the physical features of the port, serving as the administrator of all developments, the designer of all developments except the Ferry Building, and the builder and rebuilder of portions of the seawall and the piers. The Board of State Harbor Commissioners has been recognized nationally as both a pioneer and a model of a large port administration agency in the United States.

Background

A distinctive aspect of the development of the port of San Francisco is its long-time control by a state agency — the Board of State Harbor Commissioners. The Board of State Harbor Commissioners does not represent the only governmental effort to influence the port's development. The state legislature, the City of San Francisco, and the U.S. Army Corps of Engineers all participated. However, the operation of the port of San Francisco, its importance as a commercial and transportation hub, its accommodation of the needs of shipping companies and numerous types of waterfront labor, its design and construction of a great variety of physical facilities, and its architectural image were all the products of its administration by the Board of State Harbor Commissioners.

Early Development of the Port

The early development of the port of San Francisco was chaotic, shaped by weak governmental authority and the self interests of real estate speculators, merchants, and ship owners (Nash 1966:79-82). At first under the jurisdiction of the state — California claimed its tidelands in the State constitution (Robinson 1948:191) — the shallow tidelands of Yerba Buena Cove were surveyed and water lots were sold to private interests. "Work was vigorously pushed, and in October 1850, an aggregate of 6,000 feet of new wharves had been constructed by various companies and individuals at an outlay computed at $1,000,000" (Morphy 1923:1).

Also in 1850, jurisdiction over the waterfront was transferred from the State of California to the City of San Francisco. The city placed the waterfront under the control, alternately, of a harbormaster and of two dock masters (Morphy 1923:37). The city was "empowered to construct wharves at the ends of all streets." These were to be built as extensions of the alignments of the streets themselves, "not to exceed 200 yards beyond the present outside line of the beach and water lots" (Morphy 1923:11). Because streets of the grid met the irregular line of the waterfront in two different directions — at right angles to one another — an orthogonal grid of wharves was developed over the tidelands. The privately owned water lots within this grid were filled with sand and rock to make new ground.

The city's attempts to control and benefit from development of the port were ineffectual. "Many portions of San Francisco Bay were left to shoaling and silting in the 1850s and became increasingly unnavigable. Sunken wrecks, rocks, and other obstructions made large areas of the harbor dangerous for shipping, and threatened to diminish the flow of traffic. At the same time a number of individuals during this period built unauthorized wharves along the waterfront, often jutting far into the bay, thus further adding to difficulties of navigation. In 1853 a committee of the California Legislature investigated the situation and scored "the irregular and predatory manner in which the . . . waterfront is now being extended by capricious enterprise.' It noted that some plan of physical development of the harbor was absolutely essential lest the dockage was to be utterly ruined, to the great injury of the city's commerce" (Nash 1966:79). In spite of these conditions, in 1853, the City of San Francisco granted ten-year leases to numerous private interests for the construction and operation of wharves and piers. During the period of the leases,

conditions only got worse while the need for a seawall in particular became more acute. With the period of the leases due to expire in 1863 and no sign that the situation at the port would improve, the state took over the port of San Francisco from the city.

On 24 April 1863, the state's "Act to Provide for Improvement and Protection of Wharves, Docks, and Waterfront in the City and Harbor of San Francisco" was signed, establishing the Board of State Harbor Commissioners to administer and develop the port (Dow 1973:21). The Board of State Harbor Commissioners was created with three elected commissioners, each with a four-year term: "one was to be chosen by the voters, one by the legislature, and one by the city of San Francisco." (Nash 1966:82). Later, after a scandal in 1872 (Nash 1966:85-86), they were appointed by the governor to serve overlapping terms. Starting in 1911, they served at the pleasure of the governor (Voget 1943:172-176). The Board of State Harbor Commissioners met once a week. Its members were barred from having direct connections to shipping interests in San Francisco Bay. Many came to the position with neither understanding of the port nor with applicable experience (Voget 1943:176-178). In a doctoral dissertation on the history of the administration of the waterfront, Lamberta Voget characterized the job of the harbor commissioners as "finding an equilibrium between political stresses and the demands of business efficiency" (Voget 1943:172).

For its first four years, the Board of State Harbor Commissioners was immobilized by litigation in a diffused effort by private interests to retain their wharves and other waterfront property. After that, the Harbor Commissioners were able to proceed with the development of the port, undertaking the design and construction of the initial phases of a seawall in 1867. From that time forward, every improvement at the port was made under the administration of the Board of State Harbor Commissioners. During the nineteenth century, the Harbor Commissioners oversaw the design and phased construction of the new seawall, including a substantial amount of new filled land; the design and construction of numerous wharves and piers; the initial construction of the Belt Railroad; the design and construction of the Ferry Building; and the maintenance of all of these facilities. According to the president of the Board of State Harbor Commissioners and a knowledgeable writer about the port, W. V. Stafford, the beginning of

construction of the second seawall in 1878 "may be considered as marking the commencement of the permanent harbor of San Francisco" (Stafford 1910a).

Role of the U.S. Government

With the establishment of the Board of State Harbor Commissioners, the state and federal governments contributed to the development of the port in their areas of jurisdiction. As plans for the new seawall were under development, "harbor-lines" were adopted by the state legislature on 28 February 1876. These two curving, parallel lines — a bulkhead line, behind which would be land fill, and a pierhead line 600 feet out in the bay from the bulkhead line, the farthest point allowed for construction of piers or other features. In 1888, the U.S. Army Corps of Engineers, addressing the responsibility of the federal government for navigable waters, adopted "substantially the same" harbor lines (U.S. ACE 1890:2890-2892). In 1901 and 1903, at the request of the State Board of Harbor Commissioners, the Corps of Engineers moved the pierhead line out another 200 feet so that it was 800 feet from the bulkhead line as far south as Mission Rock, near where Pier 50 would later be built (U.S. ACE:3460-3462). In each case the land fill behind the bulkhead line was to a level defined as "city base" — ("The 'City Base" . . . was the height above mean high water arranged by the original surveyors as the height of the city foreshore") — by the City and County of San Francisco (Morphy 1923: 28).

In the nineteenth and early twentieth centuries, the U.S. Army Corps of Engineers also performed two other important functions in regard to the port of San Francisco. They blew up rocks that were hazards to navigation. One rock had a particularly direct relationship to the port — Mission Rock off of Pier 50. In addition, the U.S. Army Corps of Engineers dredged sand bars to maintain a clear channel through the Golden Gate.

Organization and Development of the Board of State Harbor Commissioners

The three-member Board of State Harbor Commissioners was empowered to hire a staff and rent offices. The early history of the staff is not well known. California established an eight-hour work day in 1863, the same year that the Board of State Harbor Commissioners was founded. While this may have been adhered to for state employees, it did not apply in practice to contractors who performed much of the day-to-day work of the Harbor Commissioners — in

1886, a report was prepared on "the condition of the laborers employed by contractors on the seawall" (Voget 1943:185-186).

Located for many years on the upper floors of an ordinary three-story commercial building at 10 California Street (approximately 25 to 30 feet wide) — the Harbor Commissioners were listed there between 1879 and 1898 — the building does not appear to have been large enough to have accommodated more than a small number of administrative employees. In 1899, the first year in which a list of all employees of the Board of State Harbor Commissioners is available, and the first year they occupied new offices in the Ferry Building, there appear to have been no more than two dozen central office workers, including three Harbor Commissioners, two secretaries, a statistician, a bookkeeper, three members of the engineering department, and an attorney. With a total of nearly 200 employees, most appear to have been located on the wharves, including the chief wharfinger and 19 assistants; 15 collectors; 22 pile drivers; 28 operators of tugs and dredges; 28 carpenters, patchers, and painters to perform "urgent repairs;" 8 machinists, electricians, inspectors, and plumbers; 19 workers on the Belt Railroad; 35 sweepers, watchmen, boatmen, cartmen, sprinklers, and policemen; and 13 janitors for the Ferry Building. (California. Secretary of State 1899:20)

The operations of the staff and the improvements to the port's facilities were to be paid for by the annual revenues of the port, under state law. These revenues, including tariffs (see Commerce section); rents on wharf space, the Ferry Building, and seawall lots; and Belt Railroad switching fees, fluctuated with activity at the port. This resulted in a fluctuating and unpredictable source of funds for improvements. At various times, this created problems when major expenditures were necessary, such as construction of the seawall — which was drawn out over 35 years. On the other hand, the Board of State Harbor Commissioners was able to boast that the port had never cost the taxpayers a cent; rather it generated an enormous business which benefited the economy of the state.

An important exception to the use of revenues to cover the port's expenses was the issuance of bonds on infrequent occasions. The first use of bonds was in 1891 when $600,000 was approved for the Ferry Building. When this amount proved inadequate, the Board of State Harbor Commissioners finished building it with revenue money (Nash 1966:84). In 1903, $2,000,000

was approved for the San Francisco Seawall Fund. In 1909, $9,000,000 was approved for the Second Seawall Fund, and $1,000,000 was approved to purchase India Basin. In 1913, $10,000,000 was approved for the Third Seawall Fund (BSHC 1924:58-59).

During the early history of the port, the only other source of funds was $100,000 immediately after the earthquake of 1906 “from the general state fund for the reconstruction and repair of the waterfront.” In 1907, the state lent the Board of State Harbor Commissioners an additional $250,000 for earthquake repairs (Voget 1943:77).

Prior to and along with the physical modernization of the port that began in the early twentieth century, the staff of the Board of State Harbor Commissioners also underwent changes. Up to 1909, when the *California Blue Book* listed state employees, it included the political affiliation of the white collar members of the staff of the Board of State Harbor Commissioners — almost all of whom were Republicans. Following the victory of Governor Hiram Johnson on a Progressive platform, the 1911 *California Blue Book* omitted political affiliations of employees.

The report of the first Board of State Harbor Commissioner appointed by Governor Johnson, for the biennium 1910-1912, was written in an uncharacteristically bold tone. According to the report, Governor Johnson promised in his campaign “to destroy the illegitimate influences of the Southern Pacific Company in California politics” (BSHC 1913:13) — including influence over the Board of State Harbor Commissioners. By 1868, the Central Pacific Railroad “had already established political control of the state board of harbor commissioners” (Rawls and Bean 1998:175). Among “the evil effects of Southern Pacific control” was “the habitual appointment of harbor employees, especially of the higher grades, from political retainers, very frequently of delegates to State conventions, who secured their positions in the harbor employ in exchange for their convention votes.” The remedy taken by the Board of State Harbor Commissioners: “Obviously the quickest method of removing Southern Pacific influence from harbor affairs was to discharge such employees, especially those at the heads of departments, as owed their positions, and therefore paid their allegiance, to the Southern Pacific ‘machine.’ And this has been done with gratifying improvement in the personnel of the force and the conduct of the harbor business. Not all of the employees were of this class, but many of the most important

were, and such were discharged. Devotion to public interests has thus been substituted for responsiveness to private interests." (BSHC 1913:15, 17)

For the future, the Harbor Commissioners advocated civil service reform, which was adopted by state law on 10 August 1913 (Voget 1943:184): "The harbor force should be organized, selected, and operated on business principles under the merit system, and utterly in disregard of politics" (BSHC 1913:17).

The number of employees of the Board of State Harbor Commissioners grew substantially in this period. From fewer than 200 in 1899, there were 285 in 1907 (California Secretary of State 1907:84-88) and 373 in 1911 (California Secretary of State 1913:39-42). In 1912, the *San Francisco Call* criticized the "Johnson political machine" under which "the payroll has nearly doubled . . . and there is nothing to show for it in the way of work" except votes (Francis 1912:4/1). One factor in the growth of the staff was the long-term trend away from the use of contract labor by the port's various departments and towards the adoption of "day laborers." "The Board, on recommendation of its engineering department, has substituted the day-labor system in place of the contract system in many classes of repair and other work, with the result, according to the engineering department, of much better and cheaper work" (BSHC 1913:28). Day labor is defined as "Work executed at a given rate per day, as distinguished from that paid for by the piece or contracted for at a given total figure. Day's work is especially advantageous where quality is of greater importance than time or cost in money" (Sturgis et al 1989:Vol. I:750) Contrary to the implication of its name, day laborers were listed as part of the staff of the Board of State Harbor Commissioners (California Secretary of State 1913:40-42), and thus inflated the number of employees. According to Voget, "by 1911, the contract system seems to have been abandoned" (Voget 1943:187).

The top positions on the staff of the Board of State Harbor Commissioners were the Secretary, the Chief Wharfinger, and the Chief Engineer, all of whom were paid the same annual salary which was the same as two of the three commissioners, not including the president (California Secretary of State 1899:20; California Secretary of State 1907:84; California Secretary of State 1913:39-40). Among these, the secretary was an administrative position attached to the three Harbor Commissioners. In 1918, a woman was appointed to a two-year term as secretary: "Miss

Hilda Gohrman, the new secretary of the State Harbor Commissioners, enjoys the privilege of being the first woman to hold a state position of this kind" (*San Francisco Chronicle* 1918). The chief wharfinger was supported by an assistant chief wharfinger and numerous wharfingers and collectors. "The Wharfingers Department controls the vessel operations and the berthing of vessels along the seventeen miles of berthing space available, and charges and collects the dockage for the use of this space; controls all of the pier areas, over 169 acres, and allots it to cargo operations in rotation, so that there is seldom any pier area unused; collects the tolls on all cargo and demurrage charges when cargo remains on the piers beyond the free period" (BSHC [1928]:46). The chief engineer was responsible for both maintenance and new construction of port facilities (see also the Architecture section).

The Board of State Harbor Commissioners provided the leadership for development of the port in the early twentieth century. According to Morphy, "Up to the time of the fire of 1906, most of the improvements essayed were only temporary. With the reconstruction of San Francisco, however, came the real development of the waterfront" (Morphy 1923:32). W. V. Stafford, president of the Board of State Harbor Commissioners, wrote in that period that the port's facilities were inadequate and that "it is the purpose of the Board of State Harbor Commissioners to improve and develop, to the extent of its financial ability, the port facilities of San Francisco, along modern lines, until this port shall in this respect compare favorably with any of the great seaports of the world" (Stafford 1910b:344). These goals of the Board of State Harbor Commissioners were realized in the construction of the piers, and the reconstruction of the bulkhead wharf and the construction of the final sections of the seawall between 1908 and 1938.

First Assessments of the Board of State Harbor Commissioners

In the early 1920s, Edward Morphy wrote a history of the port up to that time. Morphy believed that the port was at a turning point in its history, having come through a series of crises, most recently "the epochal incidents of the opening of the Panama Canal and the simultaneous outbreak of the World War." The port had arrived at this moment, preparing "intelligently to meet the explosion assured by the development of trade on the Pacific" because of the existence of the Board of State Harbor Commissioners and its sound organization and actions. First of all, "by its steady policy of meeting expenses out of revenues, and involving the state in no new

taxation to meet any emergency, the Board of State Harbor Commissioners weathered all difficulties and preserved intact save for increasements of the great property that is now constituted in the water front and the Belt Railroad of San Francisco." Second, in relation to all other American ports, San Francisco had "exceptional modern facilities" developed by the Board of State Harbor Commissioners "without imposing a dollar of taxation upon the community." Third, the operation was notable for "the efficiency that had been achieved in the equipment and control of this great seaport. . . . the port of San Francisco is the only port in the United States wherein all activities are coordinated and harmonized under single control." According to Morphy, "This achievement, admittedly the work of many years, was rendered possible solely by the fact that its Harbor Commissioners, through the succeeding generations, not only had behind them the credit of the State of California but also were in a position to rise superior to the narrow influences of local politics" (Morphy 1923:49-50).

Writing twenty years later about the period up to 1930, the other principal historian of the early decades of the port, Voget, echoed Morphy's view with a somewhat different emphasis. Voget considered it significant that the early success of the port of San Francisco was due to its establishment not for the local interests of one city, but for the wider community of California. "That the waterfront of San Francisco consisted of land legally created in its entirety by the state through legislative action and physically filled in under the auspices of the harbor commissioners gave to it a unique position among U.S harbors — it was in reality a *state* harbor" (Voget 1943:65). In relation to other United States ports, Voget said of San Francisco:

> The Board of State Harbor Commissioners has been a pioneer in providing a centralized system of public administration which had full control over all waterfront properties including the Belt Line. Whereas other ports in the United States have suffered at the hands of private transportation companies and other interests that crowded along their shore lands the waterfront at San Francisco, in spite of railroad influence in state politics and the strategic location of the peninsular city, has remained under public control and has been physically developed along plans envisaged as early as 1873. It has had a carefully defined schedule of charges that enabled the port to be wholly self-supporting. It has given a measure of satisfaction to port patrons. Indeed, San Francisco has been the most important port on the Pacific Coast, it has ranked high among American

> ports in general, and its administration has elicited the commendation of impartial critics. (Voget 1943:216)

The port of San Francisco was almost alone among major North American ports to be entirely under the control of a single public agency (Chittenden 1912:1140; Voget 1943:190; BSHC passim.).

One measure of the early influence of the Board of State Harbor Commissioners was the establishment of similar boards for smaller ports. The Board of State Harbor Commissioners for the ports of Eureka and San Diego were established by 1896 (California Secretary of State 1899:23-24). Jurisdiction over these ports and the port of San Jose was transferred to the state Division of Ports by 1928 (California Secretary of State 1928:145).

The port of Los Angeles, which was never under state control, was formally organized by the city in 1907 under the administration of the Board of Harbor Commissioners (Pitt and Pitt 1997:293). The other principal state ports — Long Beach, Sacramento, Stockton, Oakland, Redwood City, and Richmond — did not develop substantially until later and followed different administrative models.

The influence of the Board of State Harbor Commissioners was also felt through the participation of its staff in professional organizations, notably the American Association of Port Authorities and its Pacific Coast Associates, and the California Association of Port Authorities. Several Chief Engineers of the Board of State Harbor Commissioners routinely participated in meetings of these groups (see the Criterion C, Architecture section: The Chief Engineer and the Engineering Department). In 1936, Chief Engineer Frank G. White was president of the American Association of Port Authorities and chaired its annual meeting in San Francisco.

Effective Administration: 1920s to 1940s

While the Board of State Harbor Commissioners was an independent state agency, it turned to outsiders for advice as the issues facing the port grew more complex. The Board of State Harbor Commissioners managed an operation that concerned shipping companies, merchants, railroads, labor, and the general public. In 1918, when activity and development of the port were diminished by World War I, the Board of State Harbor Commissioners invited “some fifty or

more representatives of the ship owners and merchants, for the purpose of discussing affairs generally affecting the welfare of the port" (BSHC 1919:25). In the biennium 1918-1920, this grew into the Advisory Committee to the Board of State Harbor Commissioners. The Advisory Committee's twenty members represented importers and exporters, shipowners and operators, railroads, stevedores, warehousemen, draymen, and the Chamber of Commerce (BSHC 1921:20-21). In various forms, this advisory group remained in place for many years.

In the 1920s, the port staff continued to grow. In 1923, Morphy reported that there were 450 employees (Morphy, p. 51) and in 1926 there were 490 employees (BSHC 1926:17). In this period, the growth in the staff was partly a function of new job categories, including a business solicitor, a traffic manager, and a testing department (BSHC 1921:13, 53). Within a few years, the traffic manager became the traffic department. The testing department, to test building materials such as cement, grew steadily as its availability and usefulness became better known. The testing department was established to perform an essential task as the port turned increasingly to reinforced concrete construction, and was made available to all state agencies except the highway department. The staff also grew because of the increasing age of many of the piers, especially on the north waterfront: "On account of the increased age of the structures along the water front, their maintenance has required the employment of a larger number of mechanics in all lines," especially pile drivers, top men, carpenters, roofers, and sheet metal men (BSHC 1926:58).

Despite the prosperity of the 1920s, the replacement of old wooden piers by modern concrete structures proceeded slowly. The $10,000,000 bond issue of 1913 was not depleted until the late 1920s. In 1930, a new $10,000,000 bond issue was approved along with a plan for the replacement of the remaining wooden piers on the waterfront with "nine modern concrete piers capable of docking the largest liner afloat." (*Engineering News Record* 1930) — all the piers between Lombard Street and the Ferry Building except Pier 17 (BSHC [1938]:51). The slow development of new facilities was a principle cause of recurring efforts by San Francisco interests to transfer control of the port to the city (BSHC 1923:25; Nash 1966:89; Voget 1943:217 ff).

As the port began to feel the effects of the Depression in diminished activity, the Board of State Harbor Commissioners responded in different ways. Less than a year after the stock market crashed, the biennial report of 1928-1930 showed 480 employees, ten fewer than in 1926. By this time, the port was forced to take severe measures, adopting a plan which, "provided for reducing the time of employees, thus spreading employment among as many as possible, and the separation of others where this was found necessary. The employees have shown a laudable spirit of cheerful cooperation and consideration for their fellow employees in this respect, accepting a four and five-day week, and in some instances a three-day week with a corresponding reduction in income without protest" (BSHC [1932]:11, 13).

When the 1930 bond issue did not sell well, the port sought money from the federal Public Works Administration (PWA) beginning in 1936. The PWA paid 45 percent of construction costs and by mid-1940 had granted $926,143 for port of San Francisco projects, including Piers 9, 19, 35, and 37 (BSHC [1938]:51; 1941:61).

During World War II, the Board of State Harbor Commissioners was occupied with facilitating military use of port property.

Decline of the State Board of Harbor Commissioners

In the new conditions after the war, it became apparent that the fundamental structure of the Board of State Harbor Commissioners, as it was established in 1863, was no longer effective. According to a critical historical study of the issue by Gerald Nash, "In the post World War II era many weaknesses of state management reappeared in stronger measure . . . San Francisco was losing business to other Pacific ports and also to other forms of transportation." Following studies in 1953 and 1959, "It was clear by 1960 that the structure of state harbor administration required a thorough reorganization." By that time, there was a "different configuration of interests" than had given rise to and sustained the Board of State Harbor Commissioners, a state agency with limited flexibility in administrative and financial matters. Most of all, the growth of competition from other Bay Area ports, especially Oakland, which had geographical advantages of space and access to both rail and truck transportation routes, presented challenges that the Board of State Harbor Commissioners would not meet (Nash1966:91).

As an interim measure, on 11 September 1957 the three-member Board of State Harbor Commissioners was increased to a five-member entity called the San Francisco Port Authority, still a state agency (California State Library [1980]; San Francisco Port Authority 1966). On 7 February 1969, state control over the port of San Francisco was transferred to the San Francisco Port Commission, a new agency of the city of San Francisco (McGloin, p. 191). Ironically, it was about the time that the port was transferred to the city that the port entered its biggest crisis, represented by the surprisingly rapid adoption of containerized shipping and the emergence of the port of Oakland as a major container port (see the Criterion C, Engineering section for more details).

COMMERCE

Significance

The Port of San Francisco Embarcadero Historic District is eligible for the National Register of Historic Places under criterion A at the national level of significance in the area of Commerce as a major focal point of trade in California and the western United States during the period from 1878 to 1946. The predominant features of the district — its many piers and the long bulkhead wharf — are the location where millions of tons of goods were loaded and unloaded each year on the way between San Francisco and far-flung points. As the junction of ocean-going vessels, bay and river boats, and linkages across San Francisco Bay to the transcontinental railroads, the port of San Francisco has been at the center of trade with much of California; with the Pacific, Gulf, and Atlantic coasts of the United States; with Europe; and with points around the Pacific Ocean including South America, Australia, the Philippines, China, Japan, Hawaii, and Alaska. For most of its history it has ranked as both the leading port on the Pacific Coast and the second largest port in the United States. During World War II, it was a major component of the San Francisco Port of Embarkation (SFPE), the second largest United States military port. Because it has played a major role in the commercial history of San Francisco, California and the United States, the district is significant at the local, state, and national levels.

While the port of San Francisco was already a major port in the 1850s and 1860s — in 1861, two years before it was placed under the administration of the Board of State Harbor Commissioners,

it was the sixth largest port in the United States — nothing of that early period survives (except for two underground sections of the first seawall, of 1867, and some landfill). The oldest surviving features of the district, sections of the seawall, were begun in 1878, two years before San Francisco was first described as "the commercial metropolis of the Pacific coast," largely because of its flourishing port. At that time, San Francisco was linked by car ferries and car floats (for railroad cars) to the terminations of the first transcontinental railroad across the Bay in Oakland and Vallejo. San Francisco was the overwhelmingly dominant port in the western United States. Virtually everything shipped to the Pacific coast and 83% of cargo shipped out of the Pacific coast passed through San Francisco. San Francisco dominated trade to its tributary region and to destinations across the Pacific Ocean. The wealth of the mines was brought to the port of San Francisco from the mountains; machinery made in San Francisco and elsewhere was shipped from the port to mines in California, the western United States, Alaska, Australia, and South Africa. The agricultural wealth of central California was brought to San Francisco for processing and transshipment. Lumber came to San Francisco from northern California for export to the world.

With competition from emerging west coast ports, congestion at San Francisco's wharves and piers, and changes in the shipping industry — notably larger ships and steps toward mechanization of cargo handling — the Port of San Francisco began to plan for more modern facilities about 1900. Stimulated into action by damage from the earthquake and fire of 1906, the port was redeveloped and modernized beginning in 1908. These changes were designed to capture the increased trade, especially across the Pacific, anticipated with the opening of the Panama Canal. Changes associated with the canal were delayed by World War I. Then, in the 1920s, the nature of San Francisco's prominence as a port changed. No longer the leading port in the west measured in tonnage, in the 1920s and 1930s San Francisco was the second largest port in the United States in the value of its cargo. Nevertheless, the 1920s were busy and prosperous years. In relation to other west coast ports, San Francisco was notable for its balanced trade of general cargo rather than having a dependence on a few bulk commodities subject to wide annual fluctuations. The Depression brought about a significant decline in activity beginning in 1932. However, because of new types of business — including automobile imports, fruit and vegetable handling, and accommodation of the military — and because of the

stability of the port's trade and general cargo, San Francisco maintained its rank among United States ports.

During World War II, the port of San Francisco was largely occupied by the military as a part of the San Francisco Port of Embarkation (SFPE), responsible for delivering troops, equipment, and supplies to the war. The SFPE was the second largest military port in the United States during World War II. Nearly all of the 1,644,243 soldiers and 34.5 percent of the cargo shipped out of the SFPE was shipped from San Francisco. After operations of the SFPE ended in 1946, business at the port of San Francisco declined.

The Port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion A for its association with "a pattern of events . . . that [has] made a significant contribution to the broad patterns of our history" (United States Department of the Interior *Bulletin 15* 1991:12) in the area of Commerce. It is significant as a major trading center from 1878 when the first sections of the seawall, its oldest surviving features, were built to 1946 when business declined substantially following World War II. The wharves and piers in the district are where the goods that were traded between San Francisco and points in California, other states, and other countries were loaded and unloaded in the process of shipment.

Background

Early Commercial Activity

The commercial history of the port can be looked at in a number of stages, each of them connected with the development of the port's facilities and of the city of San Francisco.

Long before the port began to develop, San Francisco Bay was considered "one of the finest natural harbors in the world" — a sentiment expressed repeatedly by people with varying perspectives in every period of the port's history. While to the early explorers and visitors, the Bay itself was clearly a great harbor, the city did not develop until after gold was discovered. In the Mexican and early American periods, when food for the small Euro-American population was produced locally, and trade consisted of an exchange of California hides for "textiles, trinkets, and manufactured staples" (Vance 1964:10), there were numerous small landings

around the bay and on the rivers that fed into the bay close to the ranches where the hides were produced. If San Francisco was the largest of these potential cities, in reality, before 1849, there were only minor port facilities there — four "stubby wharves" between Clarke's Point (near the foot of Broadway) and Sacramento Street, none of which extended to deep water, as shown on the Harrison map of September 1848 (Kemble 1957:8).

With the hundreds of ships that came to California in 1849 and the thousands of voyagers who left the ships to travel by river and then overland to the mines, suddenly a port was an essential link in the system. With inadequate amounts of food produced in California and no local sources to supply the miners with equipment, all of these things had to be brought in ships and stored until they were needed for distribution or use: "the men who came to dig for gold were entrepreneurs, not farmers, so their economic existence depended upon the presence of a warehouse kept filled by full-time merchants" (Vance 1964:10).

In the absence of roads, rivers provided the means of travel and transport to landings near the mines. The ocean-going ships that entered San Francisco Bay were too big to travel up the rivers. Passengers and cargo had to be transferred to smaller vessels for the trips inland. (The process of transferring goods from one vessel to another in order to facilitate delivery to an ultimate destination is called transshipment. See Definitions section for more information on this process.) According to the geographer, James Vance, this happened at San Francisco because, as had occurred for centuries in Europe, "In a water-based transportation system, it is advantageous to bring inland navigation as close to the sea as possible" (Vance 1964:10). San Francisco, with its deep water off Yerba Buena cove, was closer than any of the alternatives. San Francisco emerged almost overnight as the principal port in San Francisco Bay because its location just inside the Golden Gate best fulfilled a very particular purpose: "From 1848 to 1869, from the discovery of gold to the completion of the transcontinental railroad, the Bay of San Francisco was the warehouse for the economic life of California" (Vance 1964:9).

In the early 1850s, the warehouses that were essential to the functioning of the port were first built on filled land in Yerba Buena Cove (Morphy 1923:16, 21). As the port flourished in the 1850s and 1860s, the warehouse district developed in two different areas for different purposes: "Trade in perishable goods tended to stick to the wharfhead location, while the activities of

wholesalers whose goods could be stocked for some time, and whose trade practices called for the salesman to visit the customer rather than the customer come to the wholesaler, were shifted to the area south of Market Street by the 1870s" (Vance 1964:20). In other words, the produce district grew up near the first piers, between Broadway and Market streets where produce could be quickly shipped and received and delivered to businesses in the nearby built-up parts of the city. The wholesale district grew up farther from the first piers but close to that part of the city which railroads, at that time under construction and much discussion, would serve. Housing for workers at the port and in the warehouse districts was built up immediately inland of these areas. "San Francisco's heavily male population spent its working days on or near the wharves, warehouses, counting houses, and workshops of the waterfront district" (Cherny and Issel 1981:11). In this early period of the port's history, long-standing patterns of commerce and development were established.

While San Francisco was the junction of ocean-going and river traffic, it was also the focus of an early, extensive, and long-lasting traffic on the Bay. Initially to bring agricultural products to the city from landings around the bay, a variety of small boats and ferries soon brought thousands of passengers daily, most of them commuters to work in the city. "Several early visitors to San Francisco saw it as a 'Venice' on the edge of Western culture" (Vance 1964: 33).

While the initial impetus for the development of the port was to bring goods to California from other places, the demands of California quickly gave rise to manufacturing plants and other industries. These were first developed on San Francisco's waterfront and were important both to the expansion of the physical area of the port and of the port's business. The first notable manufacturing plant was the Union Shovel Works, later Union Iron Works, located at First and Mission streets in 1851. "This concern proved a bellwether of San Francisco industry, being the first of a flock of mining machinery and equipment factories that made the city the world center of this trade by 1875. Long after the California Gold Rush had slowed to a plodding pace, San Francisco continued to supply the capital goods for expansion of mining in Australia and South Africa" (Vance 1964:26). Manufacturing plants were located on or near the waterfront south of Market Street and north of Broadway near where piers could be built for receiving raw materials and for shipping out finished products.

All of this activity had immediately impressive results. According to Cherny and Issel, in 1852-1853, "only three cities . . . could claim a larger share of the nation's foreign commerce." And by 1861, "San Francisco's harbor ranked sixth among U.S. ports in total freight handled" (Cherny and Issel 1981:11). In this period San Francisco's population grew spectacularly from fewer than 1,000 in 1848, to 34,776 in 1852, to 149,473 in 1870 (Hansen 1975:10).

The early period in the port's development was also marked by administrative chaos, inadequate piers and wharves, and a poorly maintained harbor, all of which posed a serious threat to the commercial future of the port. To correct these conditions, the state took over the port from the city in 1863 (see Government section), and created the Board of State Harbor Commissioners.

This was accomplished through the conflicting efforts of various interest groups, notably including merchants and others from the interior of the state (Nash 1966:82). The establishment of the port as a state responsibility, accomplished with the support of interests outside of San Francisco, represented the significance of the port of San Francisco to the commerce of the entire state at that time. Abetted by the stabilizing influence of the Board of State Harbor Commissioners, in 1866-1867, business was booming: "the tonnage of vessels arriving in San Francisco from foreign and eastern ports exceeded 426,000" (Morphy 1923:29).

For its first four years, the Board of State Harbor Commissioners was immobilized by litigation from a diffused effort by private interests to retain their wharves and other waterfront property. After that, the Harbor Commissioners got to work, undertaking the design and construction of the initial phases of a seawall in 1867.

Stimulus of the Port from the Transcontinental Railroad

The next phase in the history of commerce at the port was inaugurated by the completion of the transcontinental railroad in 1869 to both Vallejo and Oakland. Because the railroad ended on the continental side of the bay, it provided a substantial boost to business at the ports of Vallejo and Oakland and introduced a major long-term complication in the commercial operations of the port of San Francisco — the need to transfer rail cargo to various types of vessels for the trip across the bay to San Francisco. Without this extra step and the extra costs it entailed, the port of San Francisco may have sustained its position as the dominant port in the region.

In the short term, the railroad depressed the economy of California. In San Francisco, it "arrested harbor development, and compelled the closing down of work upon the seawall." In 1869-1870, the tonnage of vessels arriving dropped precipitously to 176,000" (Morphy 1923:29). However, within a few years, the port recovered and continued its dramatic growth. "If one were to name the most vigorous period in the early maritime history of San Francisco Bay, it would undoubtedly be during the 1870s and 1880s — a period when trade was relatively unhampered by restrictions and when shipping through the Golden Gate flourished. . ." (California State Senate 1951:105). In 1880 when the tonnage was estimated at 3,350,000 (PS 12, 1933:141), the United States census described San Francisco, with 233,959 people, as "the commercial metropolis of the Pacific Coast." At that time, San Francisco "handled 99 per cent of all merchandise imported to and 83 per cent of all exports from three Pacific Coast states, and produced 60 per cent of all manufactured goods in the region" (Cherny and Issel 1981:20). With the intersection of rail and ship transportation at the port, San Francisco was the focus of a voluminous business from eastern and foreign ports and from the city's "tributary region": "From throughout the West, commerce flowed to San Francisco: minerals from the mountains, wheat and other agricultural products from the central valleys of California, hay and timber from the north" (Cherny and Issel 1981:24). According to the U.S. Army Corps of Engineers, "The port became the distributing center of goods for consumption in the rapidly developing western territory, and when the transcontinental railroads were completed, its functions were increased to include the concentration of cargoes for shipment to the Orient and other parts of the world" (Board of Engineers for Rivers and Harbors 1933:141).

One effect of the presence of railroads during this period was the creation of "specialized ports," which were dominated by the handling of only one commodity. Whereas San Francisco was always a general cargo port, with no single type of cargo predominating, railroads made it possible to bring shipping closer to the place of production or processing of some items — rather than to the traditional place of transshipment in San Francisco. The most notable example was Port Costa, a generic name for a series of ship landings along the Carquinez Strait where wheat was brought by rail in the 1870s and 1880s. "Carquinez Strait served as the site for the world's great grain port in an alignment along the south shore between Martinez on the east and what is now Crockett on the west" (Vance 1964:39). This had the effect of diminishing volumes of

shipments that might otherwise have gone through San Francisco, and represented the first challenge to San Francisco's dominance as a port. A local study recognized that San Francisco could not compete with this development (Joint Committee 1886:4).

While the port of San Francisco remained the pre-eminent port in the west for many more years, in about 1890 other competing ports began to emerge beyond San Francisco Bay, notably Seattle, Portland, and Tacoma (California State Senate 1951:103). In that year, San Francisco's tonnage dropped to 2,540,000. In 1900, tonnage in San Francisco had increased to 6,013,680, and the city was still recognized as the metropolis of the west (Cherny and Issel 1981:35).

Modernization and Planning for Benefits of the Panama Canal

The next stage in the commercial history of the port began around 1900. At that time, a number of developments resulted in an intense period of analysis, projection, and planning both inside and outside of the Board of State Harbor Commissioners. With unusually high tonnage in 1899 to 1901 (Board of Engineers for Rivers and Harbors 1933:141), the facilities of and adjacent to the port were inadequate for the requirements of commerce. "In 1900, there were relatively few warehouses along the waterfront, nor was there sufficient space to meet the demands of specialized commerce. Docks had been built by the commissioners primarily for transit on goods moving eastward. Now, industrialization laid the groundwork for independent West Coast commerce, and the waterfront became congested. Moreover, ships increased in size. Docks built for sailing vessels that had discharged about 300 tons of cargo daily were wholly inadequate for steamers that unloaded more than 750 tons a day. . .Users of the harbor felt its inadequacies severely" (Nash 1966:87-88).

The new ports in Washington and Oregon were continuing to grow. New specialized ports were developed around San Francisco Bay and along the lower Sacramento River, including facilities for Ideal Portland Cement in Redwood City, C & H Sugar in Crockett, Union Oil in Oleum, Shell Oil in Martinez, Standard Oil in Point Richmond, and Columbia Steel in Pittsburg (Vance 1964:41). Most threatening of all were the efforts being made by Los Angeles, San Diego, and others to attract the huge new business anticipated when the Panama Canal was completed.

With the concerns associated with these developments on the minds of the port's principal managers and users, the damage done by the earthquake in 1906 appears to have stimulated planning for modernizing of the port. Within three years, several reports presented arguments and technical information to improve San Francisco's port. Walter Bartnett, the author of a post-earthquake report on the harbors of California wrote, in anticipation of the Panama Canal, "The development of commerce on the Pacific will in a few years mean more to the state than all her mineral wealth. To enable her merchants to attract this commerce to her ports and to handle it as it should be handled, the idea has become general that it is essential that the harbors of the State be improved — improved in a comprehensive and permanent way suited to the volume and character of the commerce impending" (Bartnett1906:3). Bartnett was among the first of many writers to advocate the creation of a single administration for all Bay Area ports. Other reports by Marsden Manson, former chief engineer of the port; the San Francisco Chamber of Commerce; "interior commercial groups represented by the Counties Committee of the California Promotion Committee" (Nash 1966:88); and the Federated Harbor Users Association all supported the urgent modernization of the port (Manson 1906; Nash 1966:88; Wagoner and Heuer 1908). Despite the loudly voiced concern, improvements were slow because of the way they were financed: "available funds were inflexible and did not allow for the expansion which trade required. Since the harbor was self-sustaining there was constant shortage of investment capital for growth" (Nash 1966:88).

Despite the port's problems, tonnage in 1910 climbed to 7,324,577, while the city's population increased to 416,912 (Board of Engineers for Rivers and Harbors 1933:141; Hansen 1976:10). In that year, the Board of State Harbor Commissioners reported, "The commerce of the port of San Francisco is steadily increasing with acceleration that will become greater and greater with the opening of the Panama Canal and the inevitable growth of trade in the Pacific Ocean. San Francisco possesses all of the prime requisites of a great seaport except ample docking facilities" (BSHC 1910:12).

More specifically, they reported that "Lumber, mineral oil, wine and general merchandise are at present the principal articles of trade handled over the state wharves" (BSHC 1910:16). A map of the waterfront accompanying the biennial report for 1910-1912 showed a long grain shed on

the waterfront roughly between Kearny and Montgomery streets, and cattle corrals adjacent to the grain shed between Sansome and Battery streets. In the biennial report for 1912-1914, construction was begun on Pier 15 "designed for coal bunker use" (BSHC 1914:15). Thus, during that period, just as the modern port was beginning to be built, facilities along the Embarcadero facilitated a wide range of cargoes including live animals, bulk grains, and break-bulk cargo.

As the opening of the Panama Canal got closer, writers became increasingly excited about its impact on commerce. In a paper presented to the American Society of Civil Engineers on 20 November 1912, H. M. Chittenden began, "Since the days of Magellan, imaginative minds have pictured the Pacific Ocean as the future home of the world's commerce" (Chittenden and Powell 1912:1094). As the port of New York dominated North American trade across the Atlantic, local boosters hoped that San Francisco would dominate North American trade across the Pacific and more detached observers expected San Francisco Bay ports collectively to play that roll. San Francisco's port had been compared to New York's since at least 1875 (*Overland Monthly* 1875:401). Speaking of San Francisco Bay, the German city planner Werner Hegemann, acknowledging that business at the port of New York was ten times that of San Francisco, saw great promise here: "The Bay, however, has the necessary physical characteristics to compare favorably some day with the harbor of New York." (Hegemann 1985:19-20). The opening of the Panama Canal appeared to present the opportunity for the port of San Francisco to grow enormously. In his paper on the "Ports of the Pacific," Chittenden looked at all of them and concluded, "it is now time and for a long while will so remain, that San Francisco Bay is far and away the most important port on the Coast" (Chittenden and Powell 1912:1097).

For the biennium when the Panama Canal opened, the Board of State Harbor Commissioners wrote, "The Panama Canal was thrown open to ships of limited draught in July, 1914, and within less than a year thereafter to the largest ships, and it was especially gratifying that the large new business so confidently expected began to materialize almost immediately. . . The harbor was completely ready for the canal opening, and the march of improvement and expansion has been kept fully abreast of the increasing demand for new berths." However, "The Great European war measurably halted this development, a number of the steamers familiar in this port having been

soon drafted to other lines of trade by the war's demands" (BSHC 1916:13). For the duration of the unexpectedly long war, growth of the port was inhibited. In 1920, tonnage rose modestly to 7,685,402.

Still, expectations remained high and the Board of State Harbor Commissioners continued to seek to improve conditions for commerce:

> "The board has for some time past been considering the advisability of having additional warehouses adjacent to the water front and of having such warehouses under the jurisdiction of the board so as to permit of the storage of cargoes, the movement of which is unduly delayed. It has finally been decided to proceed with the construction of the first of what may eventually be a chain of publicly-owned modern storage warehouses. The first unit will be located on a portion of Seawall Lot 4 and the corner of Bay and Kearny streets and The Embarcadero. It will be a reinforced concrete building six stories in height, with an area on each floor of about 21,000 square feet. It will be served by the Belt Railroad and will be quipped with elevators, hoists, chutes, etc." (BSHC 1919:21)

In the same spirit, the Harbor Commissioners began planning for a new Vegetable Oil Station on the south side of Islais Creek. Apart from the improvement on port land south of China Basin by the Santa Fe Railway, this represented the first significant development by the Board of State Harbor Commissioners on the southern waterfront. In 1919, the tariff structure was reorganized to favor foreign trade, which tended to be of lower tonnage but higher value (Voget 1943:67).

According to Mel Scott, "World War I . . . limited the commercial use of the Panama Canal and reduced maritime trade, so that the West Coast did not benefit appreciably from the opening of the new intercoastal route until the early twenties" (Scott1959:159). Even after the war ended in 1918, the Harbor Commissioners reported that "a great deal of shipping was diverted from San Francisco to eastern ports" (BSHC 1921:63), and referred to "the business depression which overshadowed the entire shipping world following the world war" (BSHC 1923:13).

Prosperity of the 1920s

In 1922, the first year of recovery from the wartime slump, tonnage through the port of San Francisco increased sharply to 14,837,609. While this would remain the highest tonnage until

World War II, through 1931 the figures remained substantially higher than before. While the 1920s were prosperous years at the port, the relative position of San Francisco among west coast ports changed. According to the U.S. Army Corps of Engineers, "San Francisco has generally handled a larger volume of the general import and export trade than any of its competitors, although in recent years the values have been less than at Seattle, because of the large silk movements through the latter port, and the total tonnage has been less than at Los Angeles, because of the heavy shipments of petroleum from southern California" (Board of Engineers for Rivers and Harbors 1927:163).

Thus in this period, the strength of the port of San Francisco took a different form. Beginning in the 1920s, San Francisco was increasingly a break-bulk port with a general cargo. No single items dominated trade at the port, and general cargo predominated over bulk commodities. Efforts to build up trade in bulk commodities had limited success as in the case of the recently built vegetable oil plant: "Following the decline in the vegetable oil trade through this port it was decided to convert the oil terminal at Islais Creek into an export grain terminal" (BSHC 1924:51). The grain terminal appears primarily to have served an important local need, but it did not operate at anywhere near the scale of the grain warehouses along the Carquinez Strait. By mid-1926, the last of six coal bunkers (large storage bins) had been removed from the waterfront (BSHC 1926:10) as they were superceded by oil bunkering facilities. These were used primarily for activity around the port and were not part of an export industry, as at Point Richmond, for example. Bulk commodities were important to the port, but they did not dominate.

One important new source of growth in trade came from the development of new industries linked to the port by the Belt Railroad, including a gravel company, several company warehouses, and "the Southern Pacific Co. automobile station at North Point and Leavenworth Streets" (BSHC 1926:63).

In the biennial report of 1924-1926, the President of the Board of State Harbor Commissioners wrote an enthusiastic sketch of conditions at the port.

> "The Port of San Francisco is the industrial and commercial center of the Pacific Ocean. It is the great American hub of trade on the Pacific and, in direct

> proportion as the development of this coast has unfolded, so have the facilities of this great harbor been developed to meet without stint every requirement.
>
> The Port of San Francisco serves a greatly diversified area. This may be best visualized when we realize that this service includes all of northern and central California (which comprises three-fourths of the state), all of Nevada and, when San Francisco's association with the Orient and overseas Pacific ports are considered, the entire country.
>
> This is the only combined river and bay port on the Pacific [he neglects to mention Oakland and Portland]. Two giant rivers tap the inland empire (which is larger than all the states of New England) and San Francisco Bay is the only outlet for this vast territory. This is not only the "Gateway to the Orient" but also to these rich interior valleys which hold the bulk of the wealth of the State of California . . ..
>
> San Francisco boasts of well balanced cargoes including canned fruits and vegetables, dried fruits, cotton, leather, autos, minerals, coffee, sugar, copra, tea, fibres, tin, nitrates, peanuts, crab meat, gunnies, manufactured machinery and general merchandise and other articles too numerous to recount.
>
> It is not the total tonnage alone that must be considered as the real test of value to a city and port. The value of the tonnage handled in this port is second only to that of New York, and each year the total value, proportionate to tonnage, continues to increase.
>
> It is most significant that, as each anniversary rolls around, a greater percentage of the ship cargoes sent forth from the Port of San Francisco consists of merchandise and products produced either on land within the shipping limits of the port or else is produced within the plants and factories situated in the bay area." (BSHC 1926:9).

San Francisco's prosperity at the time was linked to that of the wider region: "For the Pacific Coast as a whole, the peak period occurred about the mid and late 1920s. Owing to enormous volume in the coastwise and intercoastal trades, both vessel and cargo tonnage of San Francisco Bay reached heights never anticipated during the 1880s" (California Senate 1951:105).

While the 1920s were a prosperous period, it was also a disappointing time when the port of San Francisco failed to emerge, like New York on the Atlantic Coast, as the dominant port on the Pacific Coast: "Competition from other ports, failure of the expected Far East trade to materialize, and the agricultural depression all impeded the harbor's growth" (Nash 1966:88-89). Another reason for this was the failure to provide sufficient facilities. For the old reason, that the funding of port improvements was incremental, San Francisco did not keep up with demand. For example, after the canned and dried fruit business increased during World War I, it moved to Oakland, providing an important boost to that port, due to congestion in San Francisco — "the congestion in 1922 and 1923 was especially severe" (Grady and Carr 1934:3-4).

The Depression: Stability from Trade in General Cargo and New Types of Business

The effects of the depression of the 1930s were not felt dramatically at first. At the end of the biennium 1930-1932, San Francisco retained its second place rank to New York among United States ports. However, tonnage and revenues had dropped and there was a "considerable decrease" in activity on the Belt Railroad (BSHC [1932]:11, 33). When the same trend continued in the next two years, the Harbor Commissioners considered it "imperative that the board institute operating economies in order to balance expenditures with revenues" (BSHC [1934]:9). However, from 1932 to the end of the decade, annual tonnage between 6,000,000 and 7,000,000 (Board of Engineers for Rivers and Harbors 1939:103) was far less than at anytime since 1931 and was similar to tonnage levels in the 1910s.

Because other ports suffered declining activity at the same time, San Francisco maintained its second place rank in the value of its cargo among United States ports. (Official statistics maintained by the U.S. Customs Service and the Corps of Engineers listed tonnage each year, but in its biennial summaries, the Board of State Harbor Commissioners stressed a secondary statistic on the value of cargo which placed the port of San Francisco in a more favorable light.) As overall business declined, new efforts to generate business yielded results. Among these, several are particularly notable. In association with the previous disappearance of coal bunkering on the waterfront, the oil bunkering business flourished. Six oil companies maintained "storage and bunkering facilities" along the waterfront and "by barge at shipside" to supply ships and waterfront machinery of all kinds (Board of Engineers for Rivers and Harbors

1939:20-21). An "automobile unloading platform" was established at a spur of the Belt Railroad on North Point Street "for the purpose of unloading new automobiles for the account of San Francisco dealers" (BSHC 1938:28-29). Most extensive were various facilities for fresh fruits and vegetables. A "sizeable foreign business . . . has developed in the last six or seven years for northern California deciduous fresh fruits, due largely to precooling facilities of the State Refrigeration Terminal in the Port of San Francisco, and 'reefer' ships that deliver luscious pears, apples, plums, and grapes from the inland valleys contiguous to San Francisco to cities on the European Continent or ports in the Far East" (BSHC 1938:37). The principal facility for this business was the State Products Terminal Building on the north side of China Basin, with the State Shipside Refrigeration Terminal occupying the second floor. Facilities for related products were established or improved for bananas at Channel and Fourth streets on the south side of China Basin, for copra (dried coconut meat) at Pier 84, for vegetable oils, and for grains at Islais Creek (BSHC 1938:37).

Focusing on foreign trade, a particular strength of the port, efforts were first made to establish a Foreign Trade Zone at the port of San Francisco in the mid-1930s. "Following passage of the foreign trade zone act by Congress in 1934, and the enabling measure passed by the legislature of the State of California some months later," the Harbor Commissioners began planning and lobbying to designate Pier 45 as a Foreign Trade Zone. "The essential function of such a zone is to facilitate transshipment and reconsignment trade" (BSHC 1938:37). In other words, a foreign trade zone was a place where transshipment could take place and destinations of goods could be changed at lower cost than would normally apply (American Association of Port Authorities 1940:157).

During the 1930s, the port began to benefit from long term efforts by many in the Bay Area to attract military facilities, particularly the Pacific headquarters of the reorganized Navy (Cherny and Issel 1981:63). In 1931, Pier 14 was assigned to the Navy (BSHC [1932]:16). For the biennium 1932-1934, the chief wharfinger reported that, "This port enjoys the unique distinction of berthing at piers, U.S. Navy ships of the superdreadnaught class" and that this represented "operations not essentially related to usual port activities" (BSHC [1934]:23). By mid-1938, San Francisco Bay had been designated "the fleet's principal West Coast repair and supply base,"

including "the mammoth Hunter's Point drydock," large enough for the repair of "modern battleships" (BSHC [1938]:36-37). By mid-1940, the Board of State Harbor Commissioners reported that it had "made assignments of some of its piers for the sole use of the Army and the Navy. Greater amounts of cargo are going onto other piers for shipment to America's far flung possessions in the Pacific, Hawaii, Guam, the Philippines, and Samoa" (BSHC 1941:33).

At the end of the Depression, in the late 1930s and early 1940s, the port of San Francisco was the second largest port in the United States in the value of its cargo (BSHC 1941:9). In relation to others, its business was unusually stable due to the value of its cargo: "The foreign and domestic cargo story of the Port of San Francisco is so general and diversified in actual summation as to be bewildering in detail. Cargo passing over its piers runs into a vast array of commodities imported and exported, inbound and outbound, foreign and intercoastally, as to make up a well balanced trade of staggering collective value" (BSHC [1938]:43). In addition, it appears that the diminished volume of traditional commerce at the end of the Depression was at least partly made up by military activity.

World War II: Military Business and the Peak of Activity

With the beginning of World War II, business at the port was severely disrupted. From a civilian commercial port, San Francisco was transformed into a port whose function was to supply personnel and materials for the military. While the purpose was different during the war, the activity was the same — loading and unloading ships with people and general cargo. Thus, San Francisco remained, in essence, a commercial port, but one which was dominated by a single client — the military.

Even before the beginning of World War II in December 1941, the nature of business at the port changed while the volume of activity appears to have increased. Apparently because of security concerns, publication of biennial reports or other public statistical summaries was suspended during the war. "During World War II . . . the port came largely under federal jurisdiction. Virtually all of its facilities were devoted to the war effort in the Pacific" (Nash 1966:90-91).

The port of San Francisco appears to have come under military use in two ways. At first, during the 1930s various piers and other facilities were leased by the Board of State Harbor

Commissioners to the military without any central coordination. Then, perhaps after Pearl Harbor, the port was largely operated as an outpost of the San Francisco Port of Embarkation. In December 1940, the *San Francisco Chronicle* reported that the port was being "pressed by the army, navy, and marines for additional waterfront facilities." The port responded by assigning "pier 45 to the army and three buildings along Islais Creek to the navy." Local officials were concerned that "Any further allocation of space may result in congestion and a possible loss of business to the port in the future" (*San Francisco Chronicle* 1940).

In a meeting with the Board of State Harbor Commissioners, representatives of the Army and shipping interests discussed "the request of the U.S. Army for additional pier space." The port objected to the Army's desire to use the transit sheds for long-term storage, which would remove them from port use. Steamship companies were concerned that if they lost their piers, "they would be unable to fulfill their obligations both to the commercial shippers and to the Procurement Division of the Federal Government." In particular, the Harbor Commissioners pointed out the types of difficulties they faced: "San Francisco is the center of the coffee industry for the Western United States. That coffee represents a substantial portion of the commerce of the Port of San Francisco and a vital industry in the City, and that the coffee movement is just beginning for the season and it is a duty of the Board to provide satisfactory facilities for the expeditious handling of this and other commodities in order that they will not be diverted to other ports" (BSHC n.d.c.:1940). Altogether, the minutes of this meeting reveal the serious disruption to the normal activities of the port caused by the military takeover.

Most of the port came under the control of the San Francisco Port of Embarkation (SFPE). The SFPE "had the responsibility of delivering men and supplies the length and breadth of the Pacific" (Snow and Thompson n.d.:14). It had a long history in San Francisco, beginning "with the completion of three piers and two permanent storehouses in 1912" at Fort Mason which became "both an army general depot and the docking area for the Army Transport service" (Snow and Thompson n.d.:7). The port of San Francisco was connected to what were called the Army Transport Docks at Fort Mason in 1914 by the construction of a tunnel for an extension of the Belt Railroad. In 1932, the Army Transport Docks became the San Francisco Port of Embarkation (Kinnard 1966:Vol. 2:402). Ports of Embarkation were operated by the War

Department's Army Transportation Corps — by the end of the war, these included Boston, Hampton Roads, Los Angeles, New York, Seattle, and San Francisco (Hamilton and Bolce 1964:vii). In 1940 the SFPE began planning for expanded facilities in Oakland's Outer Harbor, eventually the Oakland Army Base. From February to October 1941, the SFPE looked intensively for more space including San Diego, Los Angeles, Seattle, and Portland, which were established as sub-ports of San Francisco and which were later made independent ports of embarkation and their sub-ports. In northern California, the SFPE controlled all or parts of the following: Fort McDowell, the Embarcadero piers in San Francisco, the Oakland Army Base, the Alameda Air Force Intransit Depot on the Alameda piers (probably a facility of the Army Air Corps, not the Air Force which was not established until after the war), the Emeryville Ordinance Shops, the Richmond Parr Terminals, the Benicia Piers at the Benicia Arsenal, Camp Stoneman, Stockton piers, Humboldt Bay piers, the Animal Depot and other agencies at the Presidio of San Francisco, and Hamilton Field (Snow and Thompson n.d.:14-15).

The port of San Francisco was used for transporting both troops and cargo. "When war began, San Francisco became the funnel through which a large majority of Pacific troops were passed" (Hamilton and Bolce 1964:46). Piers 7 and 45 were taken over before July 1941 for troop movements. Piers 17, 20, 24, 25, and 90 were taken over in 1941; Piers 37, 39, and 41 were taken over in January 1942, and Pier 19 was taken over in December 1942, all apparently for U.S. Army cargo. The Army was given 7,048 square feet in the Ferry Building and space at Fisherman's Wharf in 1942. In December 1944, Pier 15 was taken over for returning troops. In addition, Piers 25, 29, 35, and 90 were used only temporarily because of insufficient rail trackage and water depths. The U.S. Navy took over Pier 54 in 1940 or 1941, Piers 22 and 50 in 1941, and Piers 27, 31, 33, and 48 in 1942. The Navy was also given office space in the Ferry Building in 1941. An unknown branch of the government took over Pier 56 in 1940. The Army Air Corps took over Piers 90 and 92 in 1942 (Hamilton and Bolce 1964:22 and BSHC n.d.b.).

The need for the port's piers by the SFPE was an issue inseparable from the need for warehouse space wherever it could be found and from the means of moving personnel and materials around. Even before the war, the military was concerned with storage space for "'critical and strategic' national defense materials," such as hemp, wool, rubber, and tin, and a proposal was made to

build temporary warehouses on port property along the Embarcadero (*San Francisco Chronicle* 1940). "Both Oakland and Embarcadero operations suffered at the outset from a lack of space on the piers and of warehouse space near them, from having little or no rail or motor equipment facilities for relaying troops and freight from trains and warehouses to shipside, and from a shortage of expert personnel" (Hamilton and Bolce 1964:66)

Near the end of the war, *The San Francisco Chronicle* summarized conditions at the port: "At present, the 10-mile waterfront has been taken over almost exclusively by the Federal Government. Ships in the harbor have more than doubled in volume and the port boasts more embarkation than any other similar area in the world . . . Before the war more than 50 major steamship companies were represented at San Francisco piers. Today, the finest ships reconverted for war use the harbor as a major port of call" (Freeman 1945). The reason behind so much activity at the port at that time was explained by the Army: "Army cargo ships being loaded at the time of the Japanese surrender were part of the great fleet which would have supported the Allied invasion of Japan" (Foisie 1945).

When the war ended, the Army summarized "the Bay Area's role as the supply and transportation center for the Pacific War . . . the San Francisco Port of Embarkation, in 45 months of war, shipped 1,644,243 soldiers and 23,589,446 ship tons of cargo to the Pacific theaters. Those figures established the Bay Area as the second greatest war port in the United States, and with the continuation of the flow of supplies for Pacific forces, San Francisco tonnage may eventually pass that of New York . . . For brief periods following Pearl Harbor, and during the last months of the war, San Francisco was the world's greatest harbor." While this statement pertains to the entire San Francisco Port of Embarkation — primarily the Bay Area at the end of the war — nearly all of the troops and 34.5 percent of the cargo were shipped from the port of San Francisco itself. A proportionate number of the 39,000 employees, not including longshoremen, worked on the San Francisco waterfront during this period (Foisie 1945).

After World War II: Sharp Decline in Port Activity

After the war ended in August 1945, the work of the port of San Francisco within the San Francisco Port of Embarkation continued until well into 1946 (Hamilton and Bolce 1964:177). While the port tried to plan for a return to normal civilian use, General Homer M. Groninger,

commander of the SFPE, said "he could not predict when such companies as Matson would again control their great white fleets. He declined to predict, also, when the Army would relinquish control of its many San Francisco facilities." In this uncertain climate, the port began planning for the future: "Between three and four million dollars have been allocated by the State Board of Harbor Commissioners for San Francisco to make the city's waterfront the finest in the world, as soon as hostilities cease and materials are available . . . A survey is now in progress outlining necessary modernization and increasing size of several piers among the 46 jutting into the waters of San Francisco Bay. Size will increase up to 100 feet in width and several hundred feet in length and will accommodate the largest ships afloat" (Freeman 1945).

The first new development after the war, designed to accommodate the new scale of commercial shipping operations, was "a two-phase, $20 million development program" that resulted in the Mission Rock Terminal and expanded facilities at Pier 50 (McGloin 1978:192). These changes could not keep up with improvements in other west coast ports, notably Oakland, Los Angeles, and Seattle. For "the 5-year period 1946-1950, the total water-borne commerce passing through the Port of San Francisco averaged 4,835,717 short tons annually" (Board of Engineers for Rivers and Harbors 1951:110). This was slightly more than the tonnage reported in 1909 (Board of Engineers for Rivers and Harbors 1933:141). In 1949, an article in *The San Francisco Chronicle* stated, "San Francisco's maritime health is not robust" (Foisie 1949). In 1950, the U.S. Army Corps of Engineers lowered its assessment of the port of San Francisco, calling it "one of the key ports on the Pacific Coast" (Board of Engineers for Rivers and Harbors 1951:110) — the first time it was not described as the leading port on the Pacific Coast.

Although its tonnage was down and its relative position among other ports was weakened, San Francisco maintained stability in the nature of its commerce: "San Francisco is primarily a general cargo port, and diversified commodities make-up a well-balanced trade." This trade consisted of the following: "non-metallic minerals was the principal commodity classification, accounting for about 46 per cent; vegetable food products, approximately 20 per cent; metals and manufactures, 7 per cent; and the remainder was composed of textile fibers and manufactures, wood and paper, inedible vegetable products, and animals and animal products" (Board of Engineers for Rivers and Harbors 1951:110).

Building on another old strength, the port sought to develop its foreign trade through the establishment of a Foreign Trade Zone, an effort that began in the late 1930s, and through the creation of a World Trade Center in the Ferry Building. Foreign Trade Zone No. 3, the third in the United States after New York and New Orleans was established at Pier 45 after World War II. When it opened in June 1948 (BSHC 1948b:5), the port optimistically characterized its importance: "The establishment of this facility is the Pacific Coast's most useful contribution toward promoting and expediting international commerce since the opening of the Panama Canal" (FTZ No. 3, n.p.). In 1955, the World Trade Center opened in the remodeled north end of the Ferry Building (largely vacant since the ferries stopped running between 1939 and 1941). When it opened, The World Trade Center provided offices for businesses and "agencies . . . engaged in world trade," conference rooms, a library, display space, and Foreign Trade Zone No. 3; and it provided services including "merchandising and public relations assistance, translation and interpretive service, and secretarial service" (BSHC n.d.:19). As late as 1978, it was still the only Foreign Trade Zone on the Pacific Coast (McGloin 1978).

Despite these efforts, the port suffered three straight years in the 1950s in which its revenues did not meet its operating costs. Then, in 1956, revenues exceeded operating costs and, according to a newspaper headline, San Francisco "Reestablishes itself as leading port on the Pacific Coast." The good times were short lived, however — 1959 was described in another headline as the "worst year since 1903" (California State Library [1980]).

Even in its weakest years, the port continued to play a significant role in San Francisco's economy. The California Blue Book of 1961 estimated that the port of San Francisco "supports the income and livelihood of one-third of San Francisco's population" (California Secretary of State 1961:438). According to a study in the mid-1960s, "It is estimated that close to 12% of the total work force of San Francisco is supported by the activity directly and indirectly associated with the port" (Little 1966:6) — approximately 23,000 jobs (McGloin 1978).

For all of its efforts, the port of San Francisco could not keep up with the new facilities at the port of Oakland in the 1960s, nor could San Francisco compete with Oakland's geographical advantages. The use of larger ships required larger wharves which were more easily built on the spacious waterfront in Oakland, expanded by filling of tidelands by the military during World

War II and enhanced by increased dredging by the U.S. Army Corps of Engineers. Oakland's new wharves were equipped with the latest technologies for cargo handling which only increased their superiority. Shippers in Oakland connected directly with the railroads and did not require the extra step of transferring cargo across the Bay. Finally, in the late 1960s when containerization was rapidly adopted on a large scale, Oakland was the second largest container port in the world (Minor 2000:50), and San Francisco's business was falling.

TRANSPORTATION

Significance

The Port of San Francisco Embarcadero Historic District is eligible for the National Register of Historic Places under criterion A at the national level of significance in the area of Transportation as the long-time focal point of both local and long-distance transportation in the city, including ships, ferries, railroads, trucks, and streetcars. During the period of significance, from 1878 to 1946, San Francisco was the leading port in the western United States (by various measures) both because of the volume of water-borne traffic at the port and because of the relationships between port traffic and various forms of land transportation — especially railroads and trucks. For most of this period it was the focus of the largest ferry traffic in the United States and the destination of up to 8,500 streetcars a week. Every feature at the port was designed to accommodate the berthing of ships, the loading and unloading of cargo, and the interaction with land-based transportation. The various facilities of the port were continually modified and rebuilt to accommodate changing forms of transportation. The efficient interaction of the different forms of transportation on appropriately designed facilities was a key reason for the commercial success of the port. The district is significant at the local, state, and national levels in the area of Transportation. It was the focus of ship, ferry, rail, streetcar, and trucks in San Francisco. It was the leading port in California at a time when the state's economy depended on shipping. It was the leading port on the west coast and one of the leading ports in the United States during a time when shipping played a major role in interstate and foreign trade.

The port of San Francisco was developed and continually modified to accommodate ships of different sizes and types, designed to carry different cargoes, powered by different means, and

intended for different destinations. Large freighters, flat barges, and luxurious passenger liners were only a few of the types of ships that came routinely to the port. The various types of ships were initially wind powered. Steamships were introduced in the late nineteenth century. By the 1940s, all ships were mechanically powered — by steam, diesel, and gasoline. Ships were classified in four ways: for the inland trade (bay and river destinations); the coastwise trade (U.S. ports from San Diego to Puget Sound); the intercoastal trade (Gulf and Atlantic coast ports, principally via Cape Horn and the Panama Canal); and foreign trade (across the Atlantic and Pacific oceans).

The dominant features of the port were built primarily for ships: the bulkhead wharf and the many piers for most ships, and the Ferry Building for ferries (see the Criterion C, Engineering section for more detail). The shipping companies as a group had a powerful influence over the design of port facilities and the operation of the port. Major shipping companies were assigned, generally, one to a pier. Shipping company offices were located in the bulkhead buildings at the fronts of the piers (as well as in office buildings downtown) along with passenger accommodations. Cargo and longshoremen who handled the cargo were accommodated on the main part of each pier.

While the permanent development of the port of San Francisco that began in 1878 was primarily for ships, it was also designed from the beginning for the interaction between water and land transportation. Ocean-going ships, bay and river boats, and ferries arrived at the wharves, piers, and ferry slips of the port of San Francisco. These vessels were met in the beginning by human and animal powered carts and by horse car lines at the foot of Market Street, the main street of the city. In addition, in 1878 there was one rail link (established in 1872), a car ferry terminal at the foot of Second Street for the delivery of Southern Pacific rail cars between the terminus of the transcontinental railroad in Oakland and the Southern Pacific rail yard in San Francisco. The privately owned Southern Pacific Railroad had a major influence over activities and development at the state-operated port for fifty years. Until 1910, the only railroad at the port south of Market Street was that of the Southern Pacific.

In 1890, construction began on the port's own Belt Railroad, which eventually linked all of the piers, publicly owned rail yards across from the piers, and public car ferries (for rail cars) into a

single system. Like the Southern Pacific, the terminals of other transcontinental as well as regional railroads were linked to the port of San Francisco by car ferry. After the Belt Railroad was linked across Market Street into one system in 1913, the port of San Francisco boasted that no other port in the United States had such a rail system and that the key to modern and efficient port operations was the quality of the link between shipping facilities and railroads. The Belt Railroad was operated by a large staff of 150 or more workers.

The Belt Railroad facilities included a main line in the Embarcadero, rail spurs on each pier, rail yards in the seawall lots inland from the Embarcadero, car ferry slips, an office (now Pier 29 Annex), and an engine house or roundhouse (in the seawall lot inland from Pier 29 Annex). While the main line and the rail yards have been removed, the car ferry slip at Pier 43, a wide apron for a car ferry at Pier 36, the office, and many rail spurs survive. (The roundhouse, a San Francisco City Landmark, lies outside the district boundaries) In addition, the design of standard pier aprons and transit shed openings on the piers reflect the presence and operations of the Belt Railroad.

For several decades, the port of San Francisco served the largest ferry system in the United States at the Ferry Building and accommodated the transfer between ferries and streetcar lines. In the late 1930s the Bay Bridge was completed and ferry service was largely discontinued. At that point, the use of motor vehicles, especially trucks, which had been increasing for years, rapidly developed as a principal element in the movement of cargo at the port. The use of trucks in the district was associated with the paving of the Embarcadero and pier decks, from 1916 to 1932, in asphalt, to provide a smoother surface for inflatable tires. It also resulted in the construction of more connector buildings on the bulkhead wharf between the piers and in a new type of pier — the quay-type pier — which was wider than older piers and provided room for trucks to turn.

The Port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion A for its association with a “pattern of events . . . that [has] made a significant contribution to the broad patterns of our history” (United States Department of the Interior *Bulletin 15* 1991:12) in the area of Transportation. During the period from 1878 to 1946, the district represents a pattern of development for transportation in its various features — the

seawall and bulkhead wharf, the piers, the Ferry Building, and supporting buildings. The district represents the interaction of ship transportation with land transportation — especially railroads and trucks. Railroads are represented in the design of the piers to accommodate rail spurs for loading and unloading ships and in several features of the Belt Railroad — spurs, the main office (Pier 29 Annex), a car ferry slip (Pier 43), and pier (Pier 36). Trucks are represented in the asphalt surfaces of the pier decks, bulkhead connector buildings, and quay-type piers. The district is significant in the area of Transportation at the local, state, and national levels.

Background

Water-Borne Transportation

From the beginning, San Francisco's port has been the focal point of transportation in the city. Like all ports, San Francisco's was built first of all to serve ships but at the same time to interact with various other forms of transportation in order to move cargo and passengers to and from non-port sites. Because of the geography of the region, San Francisco's transportation system long remained focused on the port even with the development of other forms of transportation. Unlike Chicago, for example, which began as a port and was transformed by the railroads, San Francisco remained primarily a port city even with the development of connections to major long-distance rail lines and a substantial local rail infrastructure.

The port of San Francisco developed with facilities to serve a variety of types of vessels including ferryboats, riverboats, ocean-going vessels, sailing ships, steam ships, motor ships, barges, car ferries, car floats, freighters, and passenger ships. Wind-powered vessels were classified as ships, barks, barkentines, brigs, schooners, and sloops. Steamships were classified as ocean steamers or as bay and river steamers. (BSHC 1913:103-131)

In addition to the ferries that crossed the bay, the vessels that called in San Francisco were classified as coastwise (serving the Pacific Coast ports of the United States), inland (serving bay and river ports, including Stockton, Sacramento, Oakland, Redwood City, Richmond, and Vallejo), intercoastal (serving East and Gulf Coast ports of the United States), and foreign (serving ports outside of the United States across the Atlantic and Pacific oceans). In addition numerous types of smaller vessels including tug boats, pilot boats, fireboats, lighters, launches,

coal and oil bunkers (barges equipped with fuel storage bins or tanks), dredges, and pile driving rigs performed work in and around the port.

Over time there were changes in the number, nature and mix of types of vessels. Many of these changes are difficult to compare because of the different ways shipping statistics were recorded. One of the most fundamental changes was that ocean going vessels steadily increased in size after the mid nineteenth century. This was in large part a function of the shift from wind power to steam power — a transition that took more than fifty years. For steam-powered ships, another change took place in the conversion from coal to oil. Some small vessels, such as launches, ran on gasoline by the mid-1920s (BSHC 1926:48). To take an example of one type of ship change, in 1912 and 1913, the Port of San Francisco was visited by a large steam-powered passenger ship, *The Cleveland*, a "mighty cruise liner — one of the type that circles the globe with hundreds of tourists" (BSHC 1926:10). By the mid-1920s, ships of this sort came routinely to San Francisco and required facilities to serve them.

The number of vessels that called fluctuated. In the biennium 1910-1912, 1,472 vessels (not including barges and lighters) docked in San Francisco, many of them several times (BSHC 1913:130-131). In 1924, there were 787 vessels and in 1926 there were 1,053 vessels (BSHC 1926:48).

During the nineteenth century, except for the ferries that were located near the foot of Market Street, shipping companies were located without any consistent order along the waterfront. The 1875 Ferry House was located at the foot of Market Street specifically so that ferry passengers could conveniently transfer to horse car lines that funneled from various points to the waterfront via Market Street (Olmsted 1998:1)

As the port was rebuilt in the twentieth century, the port's managers imposed order on the piers: "pier assignments have been rearranged to bring together in convenient locations ships engaged in the same character of business" (BSHC 1921:18). In other words, inland service was located next to the Ferry Building, with coastwise, intercoastal, and foreign service successively distant from the Ferry Building. This arrangement placed the heaviest passenger traffic closest to the Ferry Building and to the transportation on Market Street between the waterfront and the rest of

the city (Morphy 1923:51). The horsecar lines on Market Street were joined by horse-drawn omnibuses and succeeded by cable cars and street cars. There would eventually be 8,500 streetcars a week turning around in front of the Ferry Building (BSHC [1928]:13).

The various classifications of shipping service were conducted by shipping companies. Those shipping companies with the most business leased piers and functioned as the operators of those piers (Morphy 1923:50). As the operators, they were responsible for any ships that docked — usually their own and often others with whom they had prior arrangements. The state's wharfingers were responsible for assigning arriving ships to berths, and while ships were generally sent to their company's piers, congestion or other special circumstances could result in ships being sent to the piers of unrelated companies.

Once cargo was unloaded on a pier, it had to be moved to a place of storage or a final destination. In the earliest years of the port, this was accomplished by human- or animal-powered carts and wagons. When the Board of State Harbor Commissioners took control of the port in 1863, they charged tariffs to shippers that were structured to encourage the quick removal of cargo from piers and the rapid departure of ships from berths. Imposed by the chief wharfinger and his deputies, these fees were known as tolls (charges for the passage of passengers or goods over a wharf; also wharfage), demurrage (charges for cargo or vehicles remaining on a wharf or pier longer than the minimal time allowed by payment of the toll), and dockage (charges for use of a berth by a vessel) (American Association of Port Authorities 1940:74, 84, 191, 205, 206). These tariffs were a source of income for the port and an incentive for efficient loading and unloading of cargo. The less time that a ship was at berth and cargo sat on a pier, the lower the cost to shippers. The sooner that one ship's business was completed, the sooner another ship could start.

While various forms of land transportation were essential to the functioning of the port, the port was fundamentally a place for ships. Many shipping companies maintained offices in the bulkhead buildings at the front of the piers, as well as downtown. As modernization of the port's facilities began in 1908, the shipping companies made an active and formalized contribution to the design of wharves, piers, and cargo handling equipment. The principal shipping companies for the period from 1908 to the 1950s were the following:

- The American-Hawaiian Steamship Company,
- Balfour Guthrie,
- Bay & River Navigation Company,
- Bay Transportation Company,
- the California Atlantic Steamship Company,
- California Navigation and Improvement Company,
- California Transportation Company,
- China Mail Steamship Company,
- Dollar Steamship Line,
- Furness (Pacific) Ltd.,
- Henry Johnson Launch Company,
- Luckenbach Steamship Company,
- Matson Navigation Company,
- The McCormick Steamship Company,
- Mitsui & Company,
- Monticello Steamship Company,
- Nelson Steamship Company,
- Pacific Alaska Navigation Company,
- Pacific Oriental Terminal Company,
- Sacramento Transportation Company,
- Southern Pacific Company,
- Stockton Steamers,
- Sudden & Christensen,
- United Steamship Company,
- W.R. Grace, and
- William Diamond & Company.

To accommodate various types of vessels, the Board of State Harbor Commissioners built and rebuilt a system of wharves and piers. These varied in dimensions, proportions, and length

depending on the types of ships to be served and the availability of land transportation and cargo handling technology. Because ships became longer and larger over time, piers were built longer and wider from the early days of the port to the mid-twentieth century. By 1900, almost all piers were built with long transit sheds to shelter cargo that was in transit. The nature of the piers was directly related to the ships they were built to serve (see the Criterion C, Engineering section for more detail). The character of the piers mattered because the suitability of the piers to the ships that used them was essential to efficient operations, and efficient operations were essential to the commercial success of the port.

Land Transportation

Because it was in the interest of both shipping companies and the Harbor Commissioners to move cargo quickly to and from the waterfront, there was constant pressure to facilitate and improve the means of land transportation. The facilitation of land transportation was integral to the development of many features of the port.

When problems of the original seawall were addressed by T. J. Arnold in 1873, he proposed a continuously curving 200-foot-wide thoroughfare along the waterfront in place of the zigzag of 150-foot-wide streets that was under construction (Voget 1943:137). This was adopted by the Board of State Harbor Commissioners in 1878 (BSHC 1877-1878:6-7) and built gradually following the completion of the sections of the seawall. The new design would substantially shorten the distances needed to haul cargo along the waterfront, “between the piers and the wholesale district of the city” (BSHC 1926-1928:12). It was designed as a working area which, together with the seawall lots, provided the space needed to move cargo between the city and the port, and to hold it temporarily while ships entered and left. Originally called East Street, its name was changed to the Embarcadero in 1909 (Voget 1943:138), though as late as 1921 the city directory still listed some businesses on East Street (SFD 1921). After it was finally completed, one of the Harbor Commissioners described it as a “marginal street belting the entire harbor. This street in now used as a great thoroughfare of the city over which passes thousands upon thousands of tons of merchandise to and from all piers” (McCallum 1923:133). By this he meant that the Embarcadero was a working area that was integral to the overall operations of the port.

In the beginning, teamsters and drayage companies were organized to haul cargo between the waterfront and destinations in San Francisco and down the peninsula. When the first railroad in San Francisco, the San Francisco and San Jose Railroad, was completed in January 1864, it stopped many blocks short of the waterfront. From the East Bay, the San Francisco and Oakland Ferry Railroad (from central Oakland to the Oakland Wharf) was completed in September 1863, the San Francisco and Alameda Railroad was completed in 1864, and the Central Pacific Railroad (the transcontinental railroad) was completed in 1869. These provided important linkages to the San Francisco waterfront, but no rail lines in San Francisco.

Southern Pacific Railroad

The first rail service at the port of San Francisco was established in 1872 when the Central Pacific Railroad, the predecessor of the Southern Pacific, built a car ferry terminal at the foot of Second Street (Harlan and Fisher 1951:22). Tracks ran from this terminal to the Central Pacific rail yards a block southwest between Townsend and Berry streets (Vance 1964:21). With these facilities, Central Pacific rail cars were brought by ferry from the terminus of the transcontinental line in Oakland to the port of San Francisco and the San Francisco rail yards almost 20 years before any other railroad operated in the port. By 1885, these facilities were all part of the Southern Pacific Railroad. Not only was Southern Pacific located in this area, but so also were the facilities of the Pacific Mail Steamship Company, with whom Southern Pacific negotiated a series of secret contracts fixing freight rates beginning in 1871 and which the railroad came to control (Daggett 1966:229-230; Scott 1959:75, 87). The Southern Pacific so dominated the southern part of the port that the area above China Basin, despite its public ownership, was known as Southern Pacific territory (Voget 1943:88). The same company also had extensive facilities on the north waterfront between Market and Vallejo streets. “Until 1875 the Central Pacific’s ferry landing in San Francisco was the Davis Street Wharf” (Harlan 1967:111) at Davis and Vallejo streets. In 1875, while retaining the Davis Street Wharf for other purposes, Central Pacific ferries began operating out of the new Ferry House at the foot of Market Street: “Railroad ferry income paid for the Ferry House — C.P.R.R. appears over the long arcade” (Olmsted 1998:1). In the early 1880s the California Steam Navigation Company, owned by the Central Pacific, provided service from a wharf at Davis Street and Broadway to bay and river ports.

When Hiram Johnson took office as governor in January 1911 on a Progressive platform, he appointed new Harbor Commissioners who set about to remove the influence of the Southern Pacific company on the port: "Nowhere in the administrative branch of the state government was the malign influence of that dominating corporation more conspicuously illustrated than in the condition and management of the San Francisco harbor. For over forty years, with infrequent intervals, not long enough to effect much of a reform, the Southern Pacific practically owned and operated the waterfront, and used it as a piece of private business property for the advancement of its own political and business interests" (BSHC 1913:13). Even after this reform, Hegemann wrote in 1915 that the Belt Railroad "gives . . . physical connection with only one single track line [Southern Pacific]. All other trunk lines have to connect by water, i.e., by the expensive system of car floating" (Hegemann 1915:53).

Apart from short-lived construction rail lines, such as the steam paddy which filled the tidelands with sand from leveled hills from 1852 to 1873 (Olmsted 1986:12-13), and the line which carried quarried stone for the foundations of the new City Hall from the waterfront to the City Hall Reservation near Eighth and Market streets in 1871 (Spotts 1889:10), no other railroads served the port of San Francisco until the 1890s. In 1900, there was a Santa Fe Railroad dock at Main Street for freight barges (Anderson 1995:5) connecting to the new transcontinental line to Oakland. In 1910, improvements were made to accommodate car ferries from the new Western Pacific transcontinental line to Richmond.

Belt Railroad

As part of his original conception for the port when he developed his proposal for the new seawall, in 1873 T. J. Arnold recommended a railroad along the Embarcadero, linking the piers to warehouses in the city (Voget 1943:86).

In 1889, the Board of State Harbor Commissioners approved a plan for the construction of a public railroad linking the port to nearby warehouses. The Belt Railroad, as it was called, was owned and operated by the Board of State Harbor Commissioners. Facilities of the Belt Railroad initially included a main line running in the inland side of East Street (later the Embarcadero), spurs running from the main line to the piers and to nearby warehouses, and steam locomotives. The locomotives pulled railcars owned by commercial railroad companies. This made it possible

to load and unload ships at the piers and to efficiently transport the material between the piers and the warehouses. Construction of the Belt Railroad was in phases beginning in 1890: "starting from the old freight ferry slip at the foot of Lombard Street and running thence to Powell Street on the west side and Pacific Street on the southeast. Its total length was about a mile and it was a three-rail track, so that narrow gauge cars could be hauled as well as standard gauge. The rails were light and the pavement between the rails was planked" (BSHC 1938:27). The Belt Railroad was gradually extended as sections of the seawall and its associated 200-foot thoroughfare were completed, and as money became available.

With the construction of the Belt Railroad, connections to the commercial railroads were established via "car ferry transfer . . . at the foot of Lombard Street" (Morphy 1923:33) for rail cars from Oakland. With the Belt Railroad, "goods may be unloaded from the ship's side in San Francisco, trucked into the waiting freight car and switched off on a railroad journey to Mexico or New York without further transfer" (Morphy 1923:33). According to the historian Gerald Nash, this had a radical effect: "the Belt Railroad made it possible to ship directly to and from San Francisco without unloading for the trip across the bay, and this altered the whole pattern of freight movements in the area" (Nash 1966:85). In addition, rail yards were built in the seawall lots to hold empty rail cars and idle locomotives.

Initially, the Belt Railroad served only the piers north of Market Street. "Early in 1910 construction was commenced on the Belt Railroad south of Market Street, beginning at a point near the foot of Spear Street and running southerly along East Street to the vicinity of the Pacific Mail docks (piers 42 and 44)" (BSHC 1910:54). This new section of the Belt Railroad was connected to rail spurs on each of several new piers — Piers 34, 36, 38, 40, 42, and 44. In addition, according to the Biennial Report: "Pier 36 is built with a ferry car slip on the outer end, and is now giving service to all of the railroads for the exchange of cars" (BSHC 1910:54).

The two sections of the Belt Railroad, north and south of Market Street, operated separately until they were connected on 27 January 1913. Around the same time construction was begun on two new car ferry slips at Powell and Mason streets. In the biennium of 1928-1930, one of the car ferry slips at Powell and Mason streets was removed and its hoisting tower rebuilt at the end of Pier 45, then nearing completion (BSHC 1931:18). These several car ferry slips for connections

to Southern Pacific, Western Pacific, and Santa Fe rail lines in Oakland and Richmond; the San Francisco, Napa, and Calistoga Railroad in Vallejo; and the Northwestern Pacific Railroad in Sausalito (BSHC [1928]:13) together with expanding Belt Railroad yards on the seawall lots and links to commercial rail yards on both sides of China Basin, established a complete system of railroads and rail–port connections for the port itself.

In addition to the car ferry slips that served the Belt Railroad along the Embarcadero, the Board of State Harbor Commissioners built car-ferry slips south of China Basin that served private railroads exclusively.

About 1900, a car-ferry slip at the southeast corner of China Basin, where China Basin meets San Francisco Bay, was in operation for the Santa Fe Railroad. The Southern Pacific Railroad operated a car-ferry slip between the foot of El Dorado Street and Sixteenth Street at an unknown date prior to 1906. By 1922, the Western Pacific Railroad operated a car ferry slip at the foot of Twenty-fifth Street. Sometime after July 1948, the Santa Fe Railroad began operation of a second car ferry slip at Pier 52. These were all taken out of operation between 1966 and the early 1980s. Of these, only a portion of the second Santa Fe slip survives — the hoisting tower at Pier 52 (Anderson 1995:8). Among these, only the site of the first Santa Fe car ferry slip at the mouth of China Basin lies within the Port of San Francisco Embarcadero Historic District. The remnants of the second Santa Fe car ferry slip at Pier 52 lie outside the district.

By 1918, 900 cars could be accommodated in the seawall lot railyards (BSHC 1919:52). Among many such statements, the Board of State Harbor Commissioners wrote in 1914: “few harbor improvements are more sought by all ports than the bringing of ship and railroad car close together, side by side if possible, so as to promote dispatch and cheapness in transferring freight” (BSHC 1914:18); and, in 1916: “San Francisco undoubtedly now has the most complete harbor belt line railroad switching system in the country” (BSHC 1916:17).

In addition, to support military efforts in relation to the war in Europe in 1914, a tunnel was built to extend the Belt Railroad to Fort Mason. From there it was easy to extend it still farther to the site of the Panama-Pacific International Exposition, then under construction. In 1917, the

railroad was extended to the Presidio (BSHC 1919:40). In the early 1920s, it had 54 miles of track (Morphy 1923:33).

Three years after the north and south sections of the Belt Railroad were joined, the Board of State Harbor Commissioners boasted at the time:

> . . . few harbor improvements are more sought by all ports than the bringing of ship and railroad car close together, side by side, if possible, so as to promote dispatch and cheapness in transferring freight. This modern trend finds one of its best illustrations on the San Francisco water front.
>
> By these constructions and extensions, a continuous belt railroad switching system, adequately equipped, is now in full and successful operation around the whole active harbor front of San Francisco, from the United States transport docks on the north and west to Channel street on the south. It is a tremendous gain to the harbor, and its real advantages only become properly estimated when it is recollected than even such a great seaport as New York has no harbor belt line. (BSHC 1916:6, 17, 18)

The Belt Railroad required a large staff, all employees of the Board of State Harbor Commissioners. Job categories included clerks, engineers, firemen, yardmasters, foremen, and switchmen (California Secretary of State 1913:41). The number of employees fluctuated. In 1938, between peaks of employment in the 1920s and the 1940s, there were 150 employees of the Belt Railroad (BSHC [1938]:29).

Work around the railroad was dangerous, both for employees and others who got in the way of moving cars. Settlements for injuries and deaths were frequent items discussed in the attorney's section of the biennial reports — always denying responsibility of the Board of State Harbor Commissioners. There appear to have been fewer accidents after the establishment of the Industrial Accident Commission in 1911.

When the Belt Railroad was built, the design of piers and transit sheds was modified to accommodate both the weight of the railcars and locomotives and also the different operations involved in moving goods between railcars and ships. At first, rail spurs were built in the centers of piers, inside the transit sheds. After about 1910, rail spurs were built on the aprons,

outside the transit sheds. In both cases, doorways had to be large enough to accommodate locomotives which often passed through the bulkhead buildings to the aprons alongside the transit sheds. The wide turning radius of railcars was an unavoidable factor in building the tracks of rail spurs as they made the necessary curve between the Embarcadero and each of the piers (see the Criterion C, Engineering section).

The Belt Railroad was a whole system that included rail spurs, the main lines in the Embarcadero, car ferry slips along the waterfront, railyards in the seawall lots, an office (now called Pier 29 Annex), a roundhouse across the Embarcadero from the office, a connection to the Southern Pacific Railroad line on Townsend Street, and spurs to numerous commercial warehouses inland from the waterfront north and south of Market Street.

Today, although substantial elements of the Belt Railroad no longer exist, important features still survive. There are rail spurs on many of the piers. The Belt Railroad office survives at Pier 29 Annex. The roundhouse — an early rehabilitation project using the Secretary of the Interior's Standards — survives across the Embarcadero outside the district.

Among the Belt Railroad car ferry facilities, portions survive. Neither the slip nor the hoisting tower survive at Pier 45. At Pier 43, the headhouse, hoisting tower, and hinged ramp survive while the pier and slips around it have been replaced.

At Pier 36, neither the slip nor the hoisting tower survive, but the wide south apron, built with rail spurs to facilitate switching cars at the slip, survives.

In addition, accommodations of the Belt Railroad survive in the designs of some of the bulkhead buildings and transit sheds. Through some of the large front openings of the bulkhead buildings locomotives and railcars passed between the Embarcadero and the pier aprons. The curved side walls of some of the bulkhead buildings and transit sheds followed the alignments of exterior and interior rail spurs running between the Embarcadero and the piers. The 1917 extension of the Pier 36 transit shed provides the most extensive and most conspicuous example of this. Both sides of the building curve along with the alignments of exterior spurs for distances of about one hundred feet. An interior spur exits on the south side along a portion of wall with a different

curve. Other prominent examples include Pier 1, with the interior alignment of a rail spur retained as public space in the bulkhead building and the curving wall of the long south side of the transit shed. At Pier 48, both side walls of both transit sheds curve along with rail spurs at the Embarcadero end. Others, such as Pier 28 have short sections of curved walls where rail spurs entered the pier from the Embarcadero.

Motor Vehicles

In the same biennium when the rail system reached maturity with the connection of the Belt Railroad across Market Street, accommodations began to be made for a new form of land transportation. With the "general adoption of the auto truck" (BSHC 1914:52) a new design for pier aprons was adopted to support their heavier loads. In the subsequent biennium, a section of the Embarcadero from Bay Street to a point between Stockton and Powell streets was paved with smooth asphalt, "to accommodate the enormously increased automobile travel" (BSHC 1916:21) (Smooth surfaces provided more comfortable rides for motor vehicles, whereas basalt block paving provided better traction for horse-drawn vehicles [BSHC 1913:21]). A program was begun at that time to divide the Embarcadero into three zones generally parallel to the seawall: rail tracks for the Belt Railroad, basalt block paving for the continued use of horse-drawn vehicles, and asphalt paving for automobiles and trucks (BSHC 1916:23)

The intersection of the Belt Railroad across Market Street with pedestrian traffic to and from the Ferry Building, the mix of pedestrian traffic with the municipal railway traffic in front of the Ferry Building, the emergence and rapid increase of motor vehicle traffic along the entire Embarcadero, the persistence of horse-drawn vehicle traffic, and the increase of all kinds of traffic except for horse drawn vehicles created new problems which called for various types of solutions. To separate pedestrians from other forms of traffic, "a viaduct extending from the second floor of the Ferry Building, across the Embarcadero to the west side of the street" (BSHC 1919:43) was begun in 1918. When it was completed 17 May 1919, the Board of State Harbor Commissioners intended "to build a second viaduct on the south side of the building" (BSHC 1921:21), but this was never done. A new position of traffic manager was established by the Board of State Harbor Commissioners in the biennium 1918-1920 (BSHC 1921:13). On 6 September 1923, plans were adopted for "a vehicular subway under the ferry street car loop to

divert such travel from the Market Street crossing on The Embarcadero and make the thoroughfare safe for many thousands of pedestrians" (BSHC 1924:17). This was completed on 2 May 1925 (BSHC 1926:71).

In the biennium of 1930-1932, the last sections of the Embarcadero were paved with asphalt, creating "a continuous smooth thoroughfare from the channel to Taylor Street" (BSHC [1932]:15). From the 1920s to the 1950s, "Movement between ship and warehouse is usually effected by truck and the special type of low-slung trucks in use provides the most convenient means of handling merchandise" (Board of Engineers for Rivers and Harbors 1933:81; also Board of Engineers for Rivers and Harbors 1952:50). This type of truck became popular in part perhaps because of a local manufacturing plant — The Doane Motor Truck Company, established at Third and Perry Streets in 1917 (Corbett 1997). Improved conditions for motor vehicles were associated with an increase in traffic accidents and in the use of heavy trucks. For the first time, the Harbor Commissioners noted substantial non-port use of the working thoroughfare. In 1922, an auto ferry line began running between Hyde Street and Sausalito. In 1927, a new auto ferry terminal was opened at Hyde Street, feeding traffic from Marin County and Berkeley onto the Embarcadero (Harlan and Fisher 1951:127, 130). "In the past few years, the Embarcadero has become an artery for private pleasure vehicles" (BSHC [1934]:27).

In the 1930s, the opening of the Bay Bridge and the Golden Gate Bridge had a profound effect on the port's complex overlapping and interdependent transportation systems. In anticipation, the Harbor Commissioners noted that, "modern highways are developing a very important form of transportation in the way of motor passenger bus and truck transport service" (BSHC 1938:27). Bulkhead connector buildings and wider wharves for quay-type piers were built to accommodate trucks (also see the Criterion C, Engineering section for more information). If the Harbor Commissioners were concerned about the changes the bridges would bring, there was little they could do about it even though the Bay Bridge was partly built on the port's property and required the port's approval (Voget 1943:169). In the biennium when the bridges opened (the Bay Bridge on 12 November 1936; the Golden Gate Bridge on 27 May 1937) the changes were immediate: "Today much of the port's inbound and outbound water-borne cargo is moved to and from the docks by trucks using the bridges" (BSHC [1938]:33). At that time there were

"more than thirty common carrier truck lines" (BSHC [1938]:29) serving the port of San Francisco. The opening of the bridges resulted in a decrease in Belt Railroad traffic, ferry traffic, and some shipping: "The loss in the inland waterway trade is attributable principally to the completion of the San Francisco-Oakland Bay Bridge and the Golden Gate Bridge which caused the discontinuance of extensive ferryboat services and deprived the port of large waterborne tonnage movements." In a related effect, "The loss in coastwise trade was caused by rail and truck carrier competition" (BSHC 1941:61). The loss of ferry traffic was also expected to diminish the need for ferry boat facilities, allowing for "replacement of ferry slips in the immediate Ferry Building area with cargo piers, giving the port still more berthing space for deep water ships" (BSHC [1938]:33). In this way, the Harbor Commissioners looked at the new role of trucks as providing an opportunity to relieve shipping congestion.

When the electrified trains of the Southern Pacific and the Key System began operating over the Bay Bridge in January 1939, ferry service to the East Bay was discontinued (Demoro and Sappers 1992:31). This left the Ferry Building without its principal reason for being — consideration was given to using it as either a bus terminal or a steamship terminal (BSHC 1941:64).

The introduction of Bay Bridge trains could not stop the general trend toward still greater dependence on motor vehicles. The width of the Embarcadero continued to be used as a working area which, the Harbor Commissioners noted, "permits orderly and rapid trucking" (BSHC [1938]:13). This trend accelerated after World War II. In 1957, the port reported, "About 75 percent of the Port's inbound and outbound cargo moves to and from piers by truck. More than 10,000 Western and transcontinental trucking firms are involved" (*Portside News* 1957). The increase in truck traffic and an even larger increase in automobile traffic — from workers driving to work — led to the establishment of a new Traffic Department and an organized effort to accommodate automobile parking by "grading, cleaning, and surfacing of the Embarcadero sea wall lots to provide free public automobile parking" by mid-1940 (BSHC 1941:17, 23). In 1948 (BSHC 1941:17, 23), the first parking meters were installed along the Embarcadero and subsequently little-used rail yards on the seawall lots were converted to parking lots (Thiemann 1958).

When the Embarcadero Freeway was built on port property — a long stretch of the Embarcadero and several seawall lots — it displaced parking, turning area for trucks, and trackage and yards of the Belt Railroad. The Embarcadero Freeway was built in the 1950s. The first section was finished in 1956. The freeway was completed in late 1958, and it was opened in February 1959 (Olmsted 1985:162, 167). This happened about the same time that the trains were taken off the Bay Bridge, which further increased the use of motor vehicles.

LABOR

Significance

The Port of San Francisco Embarcadero Historic District is eligible for the National Register of Historic Places under criterion A in the area of Labor, at the national level of, significance. It is eligible for its association with the Big Strike — the 83-day Pacific Coast maritime strike of 1934 over hiring and working conditions, which culminated in a San Francisco general strike. The wharves and piers along the entire waterfront were affected both by the absence of striking workers and, for over two weeks, by the presence of National Guard troops stationed inside transit sheds and patrolling the Embarcadero. The resolution of the Big Strike was one of the most spectacular victories in American labor history. The district is eligible at the local, state, and national levels of significance. At the local level, the strike profoundly affected life and politics in San Francisco. At the state level, the deployment of the National Guard by the governor was a central event of the strike. At the national level, the three-state strike, "and especially the events in San Francisco, attracted widespread attention and contributed significantly to the evolution of national labor policy from that expressed in Section 7(a) of the National Labor Relations Act (1933) to that in the National Labor Relations Act (1935)." (Cherny 2005)

Working conditions on the San Francisco waterfront deteriorated after an unsuccessful strike by the Riggers' and Stevedores' Union in 1919. After that time, longshoremen were hired in a degrading daily ritual known as the "shape up," where men gathered every morning in front of the Ferry Building. Gang bosses -- the foremen for a single ship's hold -- shaped up first; once gang bosses were hired for the day and given their assignments, they then circulated among the

longshoremen and selected their gang for that day's work. Beginning in the late 1920s, waterfront employers introduced a series of new technologies and work rules that resulted in a speed-up of daily work. In the context of difficult economic conditions associated with the Great Depression of the 1930s, the longshoremen fought back against the employers. In 1933, a new local branch of the International Longshoremen's Association (ILA) was established within which Harry Bridges led a militant faction. The ILA went on strike, closing most Pacific Coast ports in May 1933. When employers tried to reopen the port of San Francisco two strikers were killed and many were injured on a day called Bloody Thursday (5 July 1934). The governor called the National Guard to the port. Officially to protect state property, the presence of the National Guard was intimidating to the strikers and served also to aid the employers. After the arrival of the National Guard and a moving silent funeral parade for the killed strikers, the ILA responded by calling for a general strike; endorsed and directed by the San Francisco Labor Council, the general strike included nearly every union and largely shut down the city of San Francisco. The strike ended when both sides agreed to arbitration by the National Longshoremen's Board, appointed by President Roosevelt. The arbitration process resulted in settlement of the strike on favorable terms for the longshoremen's union, including establishment of a hiring hall to take the place of the shape-up.

In the long term, "the strike created a strong longshore union on the Pacific Coast, revived and strengthened Pacific Coast maritime unions, and contributed significantly to the revival and extension of unionism in San Francisco in particular and on the Pacific Coast more generally". (Cherny 2005)

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The Port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion A for its association with "events . . . that have made a significant contribution to the broad patterns of our history" (United States Department of the Interior *Bulletin 15* 1991:12) in the area of Labor. The district is significant for its association with the Big Strike of 1934, an important event in American labor history. The period of significance is 1934 — the year of the Big Strike. The district is significant in association with the following themes: labor history of San Francisco, labor history of California, and labor history of the United States.

Background

Introduction

The development and history of the Port of San Francisco Embarcadero Historic District cannot be told without addressing the large subject of labor. Throughout the history of the district the overwhelming majority of workers at the port were blue-collar laborers. Some worked for the Board of State Harbor Commissioners, which employed laborers in a whole spectrum of job categories. Some worked for job-related contractors, such as stevedoring and drayage companies. Some worked for shipping companies, including seamen and every type of ship worker. Among these various workers, some had full time jobs — such as the employees of the Board of State Harbor Commissioners. Most were casual laborers (laborers who worked intermittently). Most workers in all of these situations were members of labor unions.

Laborers built the port: pile drivers built the bulkhead wharf and the piers; carpenters, metal workers, electricians, painters, and others built the transit sheds, bulkhead buildings, and other buildings on the waterfront. Because maintenance is a particular problem in the exposed conditions on the waterfront, these laborers also had — and continue to have — an essential role in the maintenance of buildings and structures at the port.

Similarly, laborers built and repaired the ships that came to the port. Ship builders and repair workers included shipwrights, coppersmiths and other metal tradesmen, riggers, caulkers, ship painters, and ship scalers.

Laborers also carried out most of the operations of the port. Ships were brought to berth alongside piers by seamen and other ship workers. Ships at berth were loaded from and unloaded to the pier aprons by longshoremen. Cargo on the pier aprons was loaded into or out of waiting wagons, railcars, or trucks which were driven by teamsters or workers on the Belt Railroad. Or, cargo was moved from the pier aprons into or out of the transit sheds. Belt Railroad workers or teamsters hauled cargo to commercial warehouses near the waterfront where it was handled by warehousemen, or to the railyards of commercial railroads. Clerks recorded all of these movements.

The work of waterfront laborers was hard and dangerous. Work went on in all kinds of weather and often continued through the night. Many workers were injured or killed on the job.

The important subject of labor at the port could be addressed under criterion A from a number of perspectives. The essential contributions to the port's construction and operations could be told for individual job types or unions or for groups of job types or unions engaged in a common undertaking, such as the collective efforts of pile drivers, carpenters, electricians, and painters in building and maintaining the piers. Many such perspectives are important, but none would tell the whole story of labor's role at the waterfront and most would fall short of representing the significance of labor as a whole to the port.

This nomination does not tell the entire story of labor's contribution to the port. However, it represents that contribution by focusing on the role of longshoremen in the Big Strike of 1934. The Big Strike was itself an event of major historical significance. The longshoremen had a central role in the maritime strike from its inception. They led the coastwide walkout that precipitated the broader maritime and general strikes in 1934. And it was a San Francisco longshoreman, Harry Bridges, who "became the de facto leader of the maritime strike, then emerged as one of the most important leaders of the Maritime Federation of the Pacific Coast, which sought to unite all the maritime unions in the mid-1930s, and eventually served for forty years as president of the International Longshore and Warehouse Union.". (Cherny 2005)

In addition, under criterion A, the events of the strike and the contributions of the longshoremen can be clearly identified with the features of the district. The events of the strike had their biggest impact on the dominant features of the district — the wharves and piers — where the normally active business came to a complete stop. Among all the waterfront workers the longshoremen were most closely linked to the design of the piers and sheds because of the requirements of longshore cargo handling work.

The sheds and piers in the district (and the ships that once berthed there) were a longshoreman's primary place of work. Many other San Francisco dock workers — seafarers, teamsters, warehousemen, shipping clerks, Belt Railroad workers — were part-timers on the piers who

spent much of their working life away at sea, on the road, in uptown offices or in warehouses across the street from the piers on the west side of the Embarcadero.

In singling out longshoremen from the multitude of workers on the waterfront, the contributions of many others, starting with those who participated in the 1934 maritime strike, are also represented. Striking union included ,the Sailors' Union of the Pacific, the Marine Cooks and Stewards, the Marine Firemen, the Marine Engineers, the Masters, Mates, and Pilots, the Inland Boatmen's Union, and the Pile Drivers. The Marine Workers' Industrial Union, a Communist organization, also joined the strike. Among those lending crucial support were teamsters who refused to handle cargoes unloaded by strikebreakers, and shipyard boilermakers and machinists, who refused to work on ships involved in the strike.

Waterfront Life: Lodging Houses, Restaurants, and Bars in the 1920s and 1930s

The following discussion of labor history concentrates on longshoremen as workers and union activists. But many longshoremen and seamen, especially the single men among them, also lived on the waterfront, in lodging houses and hotels on the west side of the Embarcadero, across the street from the historic district.

Waterfront residents paid out their wages for domestic services in lodging houses and hotels, restaurants, bars, and clothing stores. The heart of the waterfront residential district was near the Ferry Building, along the west side of the Embarcadero between Market and Howard streets, and on Steuart Street, one block west of the Embarcadero. Restaurants were dispersed throughout the whole waterfront; many were located on the bulkhead wharf, and the Matson Company docks had a cafeteria (Erkkila 2002).

It was a practical and economic advantage for a longshoreman or seaman to live within walking distance of the piers, and to circulate among people who had current information about the arrival of ships and the availability of jobs. This was especially true before the 1934 strike, when the shape-up system of hiring pitted longshoremen against one another in a competition for work.

There was a downside to waterfront residence in the 1920s and early 1930s. The exploitation suffered by longshoremen, seamen, and other waterfront workers — long hours, unpredictable schedules, low pay, and a lack of job security — had a damaging effect on their lives off the job as well. Many could not afford a year-round private residence or a family life, and had little choice but to live on the waterfront in temporary lodgings. For some, proximity to the job was a hardship of its own. Historian Bruce Nelson describes the particular vulnerability of sailors confronting a waterfront world:

> With the end of a voyage the seaman exchanged the confines of the foc'sle for the tawdry world of the sailortown. Every coastal city had its port district where parasitic "land sharks" swarmed over the seafarer and devoured the "payoff," where fleabag hotels, brothels, and bars seemed to define the outer limits of his terrain, and where waterfront missions advertised a spiritual alternative to hungry and homeless men. The linchpin of this network of shoreside "friends" was the boardinghouse keeper or "crimp," who also played the vital role of shipping agent. (Nelson 1988:15-16)

Maritime workers who were fortunate enough to maintain their own homes had a very different experience of waterfront social life than those who resided in lodging houses on Steuart Street or the Embarcadero. They patronized waterfront restaurants and bars before and after work, but took streetcars home to neighborhoods like San Francisco's Noe Valley, where many Scandinavian longshoremen and seamen lived.

Retired longshoreman Reino Erkkila was part of a thriving Finnish community in Eureka Valley. In a recent interview, as part of the research for this nomination, Erkkila recalled his experience on the waterfront. While specific to his experience, these recollections also express the experience of the time. They provide information on the waterfront community life during the district's period of significance. Erkkila got his start as a longshoreman in 1935, leaving college to fill in for his father, Herman Erkkila, a longshoreman who had been injured on the job. Reino started as a temporary worker (a "permit man") but stayed on for forty years, retiring in 1975 (Erkkila 2002).

Erkkila's great-aunt, Greta Douminen, ran a boarding house on Steuart Street for Finnish seamen and longshoremen in the early 1920s. It had a bar and restaurant on the ground floor and rooms upstairs. Known as the White Front, it was just one of many boarding houses on the same block of Steuart between Mission and Howard streets. (The barroom scenes from Erich von Stroheim's classic 1924 silent film "Greed," based on Frank Norris' book *McTeague*, were filmed in the bar of the White Front). The building was torn down for construction of the YMCA in the late 1920s. The ground floor of the YMCA building later housed a soda fountain and a chain restaurant known as Foster's.

Erkkila has a very vivid memory of the hotels, restaurants, and bars that he found on the waterfront when he began work in 1935. The Seaboard Hotel was a decent working class place on the Embarcadero between Mission and Howard streets. Before the repeal of Prohibition bootleggers operated there, too.

The Boy's Cafeteria, at Steuart and Market streets, was open all night — bars had to close at 2 A.M. Olson's Restaurant was on the corner of Mission and Embarcadero. Ensign Bar was on the corner of Market and Embarcadero. Two Irish men, Eddy Sammon and Paddy Hurley, owned a bar at 58 Embarcadero between Market and Mission streets in the middle of the block. Longshoremen could go there and get an advance on their pay from a waterfront habitué known as "Nickel Al," who took a nickel on the dollar.

Erkkila recalls that some longshoremen were heavy drinkers — "they worked hard and drank hard." During the 1920s, there was a seamen's mission upstairs at the Audifredd Building. In later years there was an Alcoholic's Anonymous for seamen and longshoremen in the Audifredd.

Erkkila bought his longshoremen's cargo hooks and his parade uniform — black jeans, hickory shirts, and white caps — at Jorgenson's, located on Commercial Street between Embarcadero and Drumm, later relocated to Clay Street.

Erkkila was fortunate to have begun his longshore career in 1935. The 1934 strike had transformed both the working waterfront and the lives of the longshoremen who resided and socialized there. Along with job security and higher pay, longshoremen found a new pride and

camaraderie in their work. Before 1934, workers shaped up in front of the Ferry Building at 7:00 A.M. After 1934, they gathered in cafes for breakfast at 7 A.M. to greet one another and prepare for the day's work. Sociologist and longshoreman Herb Mills described the post-strike waterfront as "the domain of men who . . . had won a far better life":

> For decades, life for a San Francisco longshoreman had been as difficult, as dangerous, as unrewarding, and as socially stigmatized as that of any waterfront worker in the world. The old Barbary Coast had richly deserved its worldwide reputation as a degrading social maelstrom within which brutal exploitation was enforced by violence and corruption. By the late 1930s, however, the waterfront had been transformed. It was now the domain of men who by long and bitter struggle had won a far better life. (Mills 1979:130)

Background to the 1934 Strike

The Riggers' and Stevedores' Union Strike, 1919

At the start of World War I, San Francisco was known throughout the country as a union town, a "closed shop" town (Issel and Cherny 1986:91). The Riggers' and Stevedores' Union, established by San Francisco longshoremen in 1853, thrived after the turn of the century. The International Longshoremen's Association, chartered by the AFL in the early 1890s, soon issued charters to Pacific Coast locals, including several in San Francisco. The longshoremen had the support of a labor party mayor from 1901-1906 and 1909-1911, and the benefit of a decade of business expansion after the earthquake and fire of 1906. The Pacific Coast longshoremen were caught up in a jurisdictional dispute and disaffiliated from the ILA for several years, but the Riggers' and Stevedores stayed outside the ILA until 1913, when they were given an industrial charter, as ILA Local 38-33, covering all longshore work in the bay area. From 1913 to 1916, ILA Local 38-33 won closed shop conditions and high wages, and succeeded in extending its organization throughout the Bay Area (Francis 1934:141-144; Cross 1935:242; Knight 1960:273; see the Definitions section for more information on "closed shop"). However, a disastrous strike by the ILA's Pacific Coast District in 1916 let the Riggers and Stevedores to once again disaffiliate from the ILA. (Cherny 2005)

During World War I, with the shipping industry operating on an emergency basis, the Riggers' and Stevedores' Union had to sacrifice a measure of control over working conditions, but

continued to assert its strength within new wartime parameters. American workers faced a new and serious challenge as the war ended. Employers around the country, frustrated by years of labor advances, began an aggressive open shop campaign to break the power of organized labor in the workplace (Issel and Cherny 1986:94; Francis 1934:141-144; Cross 1935:249, 254; Knight 1960:299).

In this highly charged climate, the Riggers' and Stevedores' Union prepared for confrontation, seeking to restore its full arsenal of favorable pre-war work rules by calling a strike against the Waterfront Employers' Union in 1919. The union's strike demands focused on wages and on restoring some of the control over working conditions that they had lost in the 1916 strike and during World War I, especially gang size and load weights. In the early stages of the strike, the union also sought a 10 percent interest in company ownership, participation on the boards of directors, and a quarter of future dividends — remarkable demands reflecting the radical roots of some union members, who had been affiliated with the Industrial Workers of the World, nicknamed Wobblies (Francis 1934: Chapter XI, from p. 161; Cross 1935:255; Issel and Cherny 1986:94; Liebes 1942:40-41; Nelson 1988:52; Kimeldorf 1988:35; Renshaw 1967:21-22; Taft 1964:290-297; Cherny 2005).

Blue Book Union Era 1919-1933

The bitter, hard-fought ILA strike against the Waterfront Employers' Union in 1919 was a disaster for longshoremen, leading to the collapse of the Riggers' and Stevedores' Union. The strike was broken by the emergence of a dual union, formed by gang bosses and walking bosses and largely subservient to the shipping and stevedoring companies, the Longshoremen's Association of San Francisco, later dubbed the "Blue Book" Union (in contrast to the red membership book of the Riggers and Stevedores). At the time of its dissolution in the early 1920s, the Riggers and Stevedores was the oldest union in San Francisco (Francis 1934:174-176; Nelson 1988:53; Markholt 1998:30-33; Kimeldorf 1988:36-37; Cherny 2005).

From 1919 to 1933, San Francisco longshoremen had no true union representation and almost no control over their own working conditions. The Blue Book was undemocratic, corrupt, and exploitative -- a labor racket, serving largely to enrich its officers. Longshoremen were routinely fired for failure to pay union dues. Labor activists who tried to bring the ILA back to the port were blacklisted (Nelson 1988:104; Larrowe 1972:8-15; Cherny 2005).

The most powerful shipping companies that dealt with the Blue Book Union were the so-called Big Three — American-Hawaiian Steamship Company, Matson Navigation Company and Dollar Company. The three firms represented a sufficient concentration of power in West Coast shipping to dictate waterfront employer policy and present a united and aggressive front in their dealings with waterfront unions (Kimeldorf 1988: 60, 67; Cherny 2005).

Harry Bridges testified before the National Longshoremen's Board in 1934 that after going to one meeting of the Blue Book Union, "it became obvious to me at the first that it was a company-controlled union and a racket." Bridges, who had begun his career as a sailor and longshoreman in his native Australia, started work on the San Francisco waterfront in 1922. Like most newly arrived longshoremen, he began by picking up individual jobs wherever he could. But he lost every job he found by refusing to join the Blue Book Union (Bridges in U.S. National Longshoremen's Board [NLB] 1934, Vol. 3:166-167):

> I finally obtained a job in a certain gang working for the California Stevedoring & Ballast Company. I was in that gang for some two years, working mainly at Piers 44, 42, 35, 31, 29, and 26 — the various docks that were worked by the California Stevedoring Company. The specific companies for which I worked during that period were the Dollar Steamship Company, Luckenbach Steamship Company, American Hawaiian Steamship Company, and the Isthmian Company. After I was on the waterfront about six months the gang boss under whom I was working, named Otto Johnson, told me I would have to belong to the Blue Book Union if I wanted to continue to work with that gang. I refused to join this company union and consequently I was discharged from that gang by the Blue Book Union delegate . . . (Bridges, NLB 1934:Vol. 3:166)

Bridges eventually did join the Blue Book Union in 1923 in order to make a living, but refused to keep up with union dues. He spent the next two years "pirating" on the waterfront, prospecting for odd jobs while dodging persistent gang bosses who demanded that he pay his union dues or be fired:

> I spent close to a couple of years doing what they call pirating on the waterfront, which means trying to find a job wherever and whenever it might be by standing around in front of the docks and waiting for a job. During this time I worked for

> many gang bosses, but invariably I lost my job because I was not paid up in the Blue Book Union. (Bridges, NLB 1934:Vol. 3:167)

Longshoring as a Casual Industry

Even if Bridges had paid his Blue Book Union dues, however, he would still have faced serious problems finding a job on the San Francisco waterfront in the 1920s and early 1930s. Longshoring was a "casual industry" (an industry which employs workers only intermittently), while a ship was in port; and a ship's arrival in port was an unpredictable business, subject to all the fluctuations of season and weather and traffic. Longshoremen were usually hired to load or unload a particular ship, and if the ship was not ready for them they were not paid even though they were expected to wait around for the work to begin.. They never knew for certain when they would be employed, and even after they were hired they never knew how long their work would last -- they might well be dismissed before the loading or unloading was complete. In his 1932 study of longshore labor conditions for the U.S. Department of Labor, economist Boris Stern described the working conditions that placed longshoring "at the head of the list of casual industries":

> When a ship arrives in port only a handful of men may be put to work at first, for the purpose of rigging up the masts, opening the hatches, setting up the gear, etc. After this is done more men are added until the work of discharging is completed and the loading begins. Then suddenly it may develop that not enough cargo has been assembled on the pier to occupy all the hands engaged, and the entire crew of longshoremen is dismissed until a day or two before sailing time when the men must work day and night to complete the loading and release the ship on schedule time. These are the conditions of the longshore industry which deservedly place it at the head of the list of casual industries. (Stern 1932:70)

Shape-Up

The longshore hiring process up to 1934 was a degrading daily ritual known as a "shape-up." The San Francisco version of the shape-up was not very different from the one observed on the London docks in the mid-nineteenth century by labor historian Henry Mayhew. Men gathered, or "shaped," on the street outside the San Francisco Ferry Building at 6 or 7 o'clock in the morning in the hope of being chosen for a day's work by a gang boss. Bridges recalled that "we

were hired off the streets like a bunch of sheep, standing there from six o'clock in the morning, in all kinds of weather" (Bridges quoted in Larrowe 1972:8):

> When the men shape, that means, in the case of San Francisco, that they gather on the sidewalk at the waterfront directly across from the Ferry Building. They shape there all the way from 5:30 in the morning to say 7:15. Naturally, all men shape, regardless of whether you are in a steady gang or a star gang or an extra gang or no gang. I have been working say in this star preferred gang here, for quite a time; the general order after you finish a ship, "Ferry in the morning." When the boss gives you that order that means that you come down and stand on the sidewalk in the morning. (Bridges, NLB 1934:Vol. 3:219)

The system invited corruption as some gang bosses dispensed jobs in return for kickbacks or favors. Boris Stern described a typical shape-up in an American port in the early 1930s:

> But the eyes of all men in the "shape" are fastened upon every move of the hiring foreman who either calls out the men by their names or walks slowly along the "shape" pointing with his finger at a man here in the first row, at another man in the second row, and perhaps still a third man in the last row. A few seconds later he picks a whole group of five or more men who are standing together and sends them to the gate where they give their names to the clerk and receive the brass number which entitles them to work on the pier . . . When the picking is finished, the men who were unfortunate enough to be left behind, sullenly and sadly move away from the pier only to return several hours later in the hope of being more successful in the next "shape." (Stern 1932:71-72)

If longshoremen didn't get hired at the shape-up at the Ferry Building, they would make the rounds of other piers where ships were in port, waiting to take the place of workers who did not show up for a job. That was the experience of Jack Maclalan, who started work on the San Francisco waterfront in about 1928:

> Lots of times the boss would tell you at seven o'clock he did not have any ship, and you would be released, but you would know, for instance, like Pier 42, or 44, or 46, or any of those docks, it would not make any difference, you would know there would be a ship coming in there and you would go down there and stand in front of that pier, thinking that somebody in a certified gang might not show up,

> and you would say, "Well I know such and such a boss at that dock, and possibly if this fellow does not show up . . ." (Maclalan, NLB 1934:Vol. 2:150; Bridges, NLB 1934:Vol. 3:220)

Stern was harshly critical of the inefficiency, as well as the abuse, inherent in the shape-up, arguing that employers themselves suffered from it in the long run.

> Every pier of any importance in the port thus becomes a center for the hiring of longshoremen . . . While the longshoremen are wandering from pier to pier in search of work with no means of knowing at what pier men are needed, the employers who are short of men are equally at sea as to where efficient men can be had. Both employers and longshoremen suffer from this failure to make connections . . . (Stern 1932:72)

Sociologists Herb Mills and David Wellman analyzed the overwhelming impact of the shape-up on San Francisco's longshore industry by citing the many levels of competition played out there. The longshoremen were pitted against one another, vying for the best paying jobs as members of a steady gang who were "on call" for a particular company. Casual gangs, hired only as a supplemental workforce, tried to establish themselves by out-producing and supplanting the steady men. The steady men in turn were forced to work even harder to hold onto their jobs. The longshoremen's employers, a variety of different stevedore companies, competed with one another for contracts from ship owners. Stevedore companies won contracts by driving up production, placing additional pressure on steady gangs who were thus locked in a larger game of competition with one another (Mills and Wellman 1987:173).

Bridges described the competition between steady men and casual workers who were "pretty desperate, hard up, wanted to eat, hungry":

> And when I say speed-up I mean it was pretty killing. The men, the various longshoremen, both as individuals and as members of a gang, they were driven at a pretty hard pace. Because by that time the group of longshoremen on the waterfront were about evenly divided into two groups. You had one group of men that you might say worked steady, relatively speaking, and another group of men that worked casually . . .

> The men that were working steadily, they were in the docks working on the job, and twenty-four hours a day, certainly sixteen, eighteen hours a day, there was always a large group of men standing outside the docks, see, ready and willing to take the place of any person inside that wasn't working fast enough. Now, in order to understand that, it should be borne in mind that the men standing outside willing to take a job of a so-called man working steady, merely had in mind making a living. They were pretty desperate, hard up, wanted to eat, hungry.
>
> I worked in a steady gang for quite a number of years. You maintained your job in a steady gang because of your ability to keep going over a long period of time at high rate of speed. In other words, we produced. (Bridges, in Larrowe 1972:10-11)

The shape-up undermined all attempts at genuine union organization among San Francisco longshoremen in the 1920s. As a last resort, employers had the ability to avoid piers experiencing labor unrest by directing ships to other piers or other Bay Area ports. Ports competing with one another for commerce were thus drawn into the pervasive shape-up system. "By the late 1920s the employers had fashioned a shape-up that permeated virtually every facet of the Pacific Coast longshore industry" (Mills and Wellman 1987:173-4). Only in Tacoma did the ILA maintain any influence over wages and working conditions. (Cherny 2005).

Work Speed-Up

The pace of work was, as Bridges emphasized, an important aspect of the competition between longshore gangs. During the mid-1920s, employers began to speed up the pace by introducing new cargo handling methods, exposing workers to added risks in what was already one of the most hazardous jobs in the country. While the job was getting faster, work shifts were growing longer, sometimes lasting for 24 to 36 hours. At the same time, work gangs were getting smaller. Short gangs of 4 to 6 men were working on the docks and in the holds of vessels where formerly 8 to 10 men had been employed. By 1930, West Coast ship owners took pride in claiming that labor output per worker was higher in San Francisco than in any port in the world (Kimeldorf 1988:82; Mills and Wellman 1987:174).

The speed-up was achieved by incremental, rather than revolutionary, changes in longshore technology. From the mid-1920s until the mid-1930s there was a gradual shift from the use of rope slings and hand trucks to platform slings and power trucks. In the older rope sling/hand

truck method of unloading a ship, a load was built up in the ship's hold, and placed into a rope sling. The ship's hook was attached to the sling, and the load was dragged to the hatch opening by winch power. When the load was landed on the dock, the rope sling was unhooked and dock men using two wheel hand trucks took pieces of the load and pushed or pulled it to a designated place on the dock or inside the pier shed (Liebes 1942:26).

The speed-up began about 1924, with the introduction of platform slings and motorized dock jitneys. Platform slings carried bigger loads between the dock and the ship than rope slings had done, and motorized jitneys, the first power trucks used on the docks, moved these larger loads much more quickly than hand trucks. With the new technology, the loads were heavier and the job was faster and more continuous, with fewer breathing spells between loads.

The change was gradual and piecemeal, or as Bridges put it during his testimony, "Gradually all the time; it never came along at exactly one time, it was just step by step." But the cumulative effect was punishing for longshoremen, stretching the limits of physical endurance (Bridges, NLB 1934: Vol. 3:183).

Under the Blue Book Union, the longshoremen had no choice but to endure or be fired, as individuals and gangs were forced to compete with one another in a race to keep their jobs. Jack Maclalan testified before the National Longshoremen's Board that "it was a case of speed" from the time he started work on the waterfront in 1928:

> It was a case of speed to see which was the fastest. They would have four or five hatches, and the bosses in the different gangs would rush their men to see which one would get his hatch out first, and it was just a drive all the time; and as I say, if you could not produce you just were not hired again. (Maclallan NLB 1934:Vol. 2:147)

Bridges testified that the acceleration in the pace of work led to serious accidents on the job. He witnessed a fatality on board ship when a boss forced two gangs into a competitive speed-up in the loading of copper:

> The gang next to us was in such a hurry to sling the copper that it was slinging over bad loads. Our gang, which may have had a little more experience in copper,

> called their attention to it . . . My gang boss was there and he chased us back to our own hatch and said, "You mind your own business and get your car out ahead of them, that is all you have to do." About three quarters of an hour after that, this load fell down into the hold, which is when it killed . . . one man. I think the second man had his leg cut right off. This was absolutely due to the fact that we were competing against each other at that time. (Bridges, NLB 1934:Vol. 3:175)

Protest was futile, and would often get a longshoreman fired and replaced by another longshoreman waiting at the pier for a chance at a job. Longshoreman Germain Bulcke recalled, "The waterfront was just full of people looking for work, and if you got into any kind of an argument with the boss or if he didn't like you, he'd point and say, 'Look, if you don't shape up there are fifty men out there waiting to take your job,' which was true" (Germain Bulcke in Kimeldorf 1988:82).

A New ILA Union in 1933

The Great Depression intensified the misery of waterfront workers and sharpened the competition for work, as crowds of 4,000 to 5,000 unemployed men shaped up on the piers every day. The Depression was hardest on the most marginal of longshore workers — the members of casual gangs. There was almost no demand for casual laborers in a shipping industry whose coastwide cargo shipments dropped by more than one third during a three-year period from 1929 to 1932. In 1933, wages were cut from 85 to 75 cents an hour, the lowest rate in 25 years (Kimeldorf 1988:82; Selvin 1996:57).

The tide began to turn in 1933, at the height of the Great Depression, when longshore labor organizers in San Francisco obtained a charter from the ILA for a new union local, Local 38-79, part of the American Federation of Labor (AFL). The misery of the Depression, fourteen years of oppressive working conditions, and bitter dissatisfaction with the Blue Book Union sent longshoremen flocking to the new ILA union. Passage of the National Industrial Recovery Act, Section 7(a) in June 1933, gave hope and inspiration to longshoremen and the whole American union movement by guaranteeing the right of workers to collective bargaining through unions of their choice (Cross 1935:255; Larrowe 1972:15; ILWU 1997:6).

A militant ILA faction led by Harry Bridges began to assert its influence over the new union by

winning seats on the executive committee. The faction took its name, Albion Hall, from the street in San Francisco's Mission District where their meeting room was located. "Sam Darcy, the head of the local Communist Party, gave them an old mimeograph machine and turned over to them a newsletter, *The Waterfront Worker*, that had been initiated by the Marine Workers Industrial Union. They used the *Waterfront Worker* to call attention to dangerous working conditions, to call for a democratic union, to argue against racial discrimination in the union and on the waterfront, and to argue for union control over working conditions". (Cherny 2005) The Albion Hall group led job actions in the summer of 1933 and began to mobilize support among longshoremen who "saw that we were getting away with it and began to imitate us," as Bridges later recalled:

> Before we got to be generally known along the waterfront, we were letting our presence be felt on the docks where we regularly worked. We were the ones who received complaints from the men and relayed them to the foremen. We took specific action against the speed-up by slowing up at the winches and in the hold…Other men on the docks watched and saw that we were getting away with it and began to imitate us. (Bridges in Larrowe 1972:17)

In October 1933, four hundred members of the newly formed ILA struck the Matson Navigation Company, for firing four union members. Under pressure from federal officials, Matson rehired the men, handing the ILA a convincing and unexpected victory that led to the demise of the Blue Book union (Cross 1935:255).

Bridges described the successful Matson strike as the turning point in the ascendance of the ILA and the disappearance of the company union. "That was the end of fear and intimidation . . . From that time on the union was established, it was recognized, it was in business" (Bridges in Larrowe 1972:21).

The ILA's fundamental demand in bargaining with employers was for a union-controlled hiring hall that would equalize the opportunity to work. Their other basic demands were: a coast-wide contract, with all Pacific Coast workers receiving the same basic wages and working under the same hours and conditions; and a six-hour work day with a fair hourly wage (ILWU 1997:4-6; Larrowe 1972:18; Keller 1939:12; Mills and Wellman 1987).

Waterfront Employers' Union

The Waterfront Employers' Union (WEU) had always been hostile to genuine longshore unionism. And it was even less inclined to make concessions after a disastrous drop in shipping during the Depression. Shipping had been a very competitive business with narrow profit margins even before the Depression. Now some of the smaller WEU companies were on the brink of collapse. The WEU and its president Thomas G. Plant, a corporate vice-president of American-Hawaiian, flatly refused all of the demands made by the ILA (Kimeldorf 1988:55, 60).

The WEU, dominated by the Big Three, was led by hard-liners like Plant who adopted a policy of all-out resistance to labor unions. WEU strategy, perceived as provocation by the union, tended to inflame the radical instincts of longshoremen and other waterfront workers. As San Francisco longshoreman and union leader Henry Schmidt put it, "The union was made radical by the employers. They really left us no choice" (Schmidt in Kimeldorf 1988:52; Kimeldorf 1988:76).

While the ILA prepared for a walkout of 12,000 Pacific Coast longshoreman in March 1934, Plant announced his intention of hiring an army of strikebreakers. The tactic had succeeded in earlier strikes, and Plant was confident it would work again. On the eve of the strike in May, the Waterfront Employers' Union anticipated an easy victory (Kimeldorf 1988:61).

The 1934 Strike

Longshore and Maritime Unions Strike, 1934

Longshoremen led the strike with their coastwide walkout on May 9. Ports from San Diego to Bellingham, Washington were affected. Violence erupted on the very first day of the strike in San Francisco. A gathering of two hundred strikers was charged by one hundred mounted police riding motorcycles and horses. Hundreds of strikers in Portland and Seattle also battled police during the first week of the strike (Larrowe 1972:38; Selvin 1996:104; Kimeldorf 1988:103).

Seamen and other maritime workers joined the strike within days. By the middle of May, all of the Pacific Coast maritime unions had walked out — the Sailors' Union of the Pacific, the Marine Cooks and Stewards, the Marine Firemen, the Marine Engineers, and the Masters, Mates, and Pilots. The Marine Workers' Industrial Union was among the first to join the strike. When

the Teamsters' Union of San Francisco showed their support by refusing to haul scab cargo from the docks to the warehouses, the waterfront was shut down (Kimeldorf 1988:101; Cross 1935:255-256; Hinckle 1985:28; Selvin 1996:101-102).

Over 1,000 strikebreakers were employed in San Pedro (the Port of Los Angeles). Violent confrontations between strikers and scab workers there on May 15 resulted in fatal shootings of two strikers; another six were wounded by gunfire and there were dozens of injuries. In San Francisco on May 28, 200 mounted police attacked a group of 1,000 unarmed picketers on the Embarcadero near Pier 18; the ensuing hand-to-hand combat, described by city newspapers as a "bloody pitched battle," produced many casualties on both sides. On June 30, a striking longshoreman was fatally shot in the back just north of Seattle **(**Selvin 1996:104; Kimeldorf 1988:102-104).

ILA Opens Its Doors to Black Longshoremen

Both the Riggers' and Stevedores' Union and the Blue Book Union, firmly entrenched in a tradition of white supremacy, had refused membership to black men. Except in Tacoma and Seattle, where African Americans were admitted to the ILA locals, black workers' only avenue of employment on Pacific Coast docks was through a back door, as strike breakers. Hundreds of black workers had helped break the 1919 Riggers' and Stevedores' strike in San Francisco, but very few found steady work afterwards, during the Blue Book Union era and they did so in segregated gangs. The Bureau of the Census listed four black longshoremen in San Francisco and Oakland in 1910, and 23 in 1920. In 1930, census records cite only 57 black longshoremen, along with 3,375 whites (Nelson 1988:133; Nelson 2001: 95). Robert Francis, an African American economist at U.C. Berkeley who filed a doctoral dissertation on the labor history of the San Francisco waterfront in May 1934, estimated that no more than fifty black men worked on the San Francisco docks at the time (Francis quoted in Nelson 2001:96; Nelson 1988:133; Cherny 2005).

In late 1933, pressured by the Albion Hall group, the San Francisco ILA local opened its doors to black members and hired a black organizer. But just before the strike started in May 1934, there were only twenty-three black men working as ILA members along the entire Pacific Coast. (Cherny 2005)

Several hundred black men were hired as strikebreakers in the early days of the 1934 strike in San Francisco, although most of the scab laborers on the waterfront were office workers,

University of California football players, and other college students (Nelson 1988:133). (Cherny 2005)

Harry Bridges and his allies in the ILA welcomed black workers into the longshore union arguing that the strength and survival of the union depended on racial equality in the rank and file. Historian Bruce Nelson recounts Harry Bridges' personal involvement in the recruitment of black union workers during the 1934 strike:

> During the 1934 strike, Bridges spoke at black churches and "implored blacks to join him on the picket line." Nearly a decade later, he recalled, " I went directly to them. I said: 'Our union means a new deal for Negroes. Stick with us and we'll stand for your inclusion in the industry.'" And, he declared, "almost without exception, they stuck with us. They helped us. The employers were frustrated in their attempt to use them for scabs." (Nelson 2001:96)

Henry Schmidt, a Bridges ally, recruited black union members on the Luckenbach piers (Piers 29 and 31) in San Francisco, where most of the black longshoremen were working. Their response was positive, and almost immediate, as he later recalled:

> On the same afternoon or the next day these Negro brothers came to the then union headquarters at 113 Steuart Street. I can still see them coming up the stairs and entering the premises . . . Somebody raised the question, "Why didn't you come earlier to join up?" And they replied, "We didn't know that you wanted us." (Schmidt quoted in Nelson 1988:134)

Bruce Nelson describes this incident as a "vitally important breakthrough early in the strike that was to set the tone for the future of race relations on the San Francisco docks" (Nelson 1988:134).

Work Speed-Up as an Issue in the 1934 Strike

The speed-up in the pace of longshore work became an issue during the early days of the strike. Longshoremen charged that new technology, together with decreases in gang size, resulted in larger cargo loads and a dangerous speed-up on the job. Employers claimed that the "labor saving machinery" had improved productivity and made longshoring easier. Their opposing viewpoints were publicized at the end of May 1934:

> Also, under the Blue Book company union system, the work has been speeded up to such an extent that the men are now mere slaves. Ships that five years ago took forty hours to discharge are now discharged in half the time. Machinery introduced has eliminated one-third of the men employed . . .
>
> Statement of the International Longshoremen's Assn. May 24, 1934

> The longshoremen allege gross working abuses. The fact that cargo can be handled more rapidly today than it was a few years ago is not due to the fact that men were driven or speeded up, but solely because labor saving machinery had been introduced on a wider scale than previously. No industry can survive which does not measure its outgo by its income, and such measures to effect economies should be recognized by the longshoremen as a necessity of modern business practice . . .
>
> Statement of Waterfront Employers' Union, May 25, 1934
> (Both Statements in Eliel 1934: Exhibit S and Exhibit T, quoted in Liebes 1942:49).

Joe Ryan's Deal with Employers

Joe Ryan, president of the ILA, flew out from New York and took charge of negotiations with Pacific Coast employers. "Together with the leaders of the Pacific Coast District, he negotiated a tentative agreement with the employers' organizations representing the largest ports, on May 28, but it was rejected by all the large locals. Ryan tried again, several weeks later, in San Francisco. This time, fewer Pacific Coast District officers participated but two Teamsters' Union leaders joined the negotiations. To great fanfare, the mayor of San Francisco, Angelo Rossi, announced an agreement on June 16. The agreement called for hiring halls under "joint and equal control"; no discrimination in hiring on the basis of union membership or non-membership (i.e., no preference of employment for union members); and further negotiations to work out wages, hours, and work rules port by port." (Cherny 2005). Striking longshoremen in San Francisco and throughout the Pacific Coast flatly rejected it (Cross 1935:256; Larrowe 1972:47-54).

Ryan blamed "communists and strike agitators" for the outcome of the vote on his plan. Pacific Coast longshoremen now faced the employers on their own, without the involvement of national ILA officials. Refusing to yield, the union joined forces with other striking maritime unions in establishing a Joint Maritime Strike Committee. It was a striking example of the militancy and courage that were shown at every critical juncture during the strike. The chairman of the Joint

Maritime Strike Committee was Harry Bridges, also the chair of the San Francisco ILA local's strike committee (Ryan in Larrowe 1955:100).

Industrial Association of San Francisco

The Industrial Association of San Francisco (IA), the most important employers' group in San Francisco in 1934, assumed leadership of employer strike strategy out of concern that the ship owners might not win on their own. The Industrial Association, representing almost all of the biggest business firms in the city, had been formed in 1921 to promote the open shop and led the anti-union campaign in San Francisco and northern California. The IA board included, at different times, representatives of Pacific Gas and Electric Company, Southern Pacific Company, Matson Navigation, California Packing Company, Fireman's Fund Insurance, D. Ghirardelli Company, Haas Brothers, Levi Strauss and Company, American-Hawaiian Steamship Company, and the major department stores. National firms were represented on the IA board as well, including U.S. Rubber, Westinghouse, Bethlehem Shipbuilding, Pierce-Arrow, General Electric, and General Cigar The IA presented itself as an alternative to collective bargaining, and argued that unions were no longer necessary. Those that survived, it claimed, were either corrupt or communist. (Issel and Cherny 1986:96; Nelson 1988:71).

Ship owners who had been prepared to sacrifice two or three million dollars to defeat the longshoremen saw $45 million of Pacific Coast cargo immobilized during the first month of the strike. They hired more than 1,000 strikebreakers in San Francisco. But more than 90 ships were tied up in San Francisco Bay waiting to be loaded or unloaded (Cross 1935:256; Kimeldorf 1988:61).

In early June, the Waterfront Employers Union had yielded to the Industrial Association as the chief strategist for the employers. By the end of June, the Industrial Association began to prepare to open the port using strikebreakers. The IA formed the Atlas Trucking Company, for the movement of waterfront freight in San Francisco and rented the Garcia and Maggini warehouse at 128 King Street to receive cargo transported from the piers. The IA announced its intention to do "whatever is necessary" to reopen the port (Selvin 1996:134, 136; Cherny 2005).

Employers and their allies in city governments up and down the Pacific Coast tried to seize control of the situation by forcing open all the major ports on July 3. On July 2, San Francisco

newspapers carried warnings that a convoy of trucks, guarded by city police, would move onto Pier 38 (the McCormick dock), on San Francisco's southern waterfront, where cargo would be loaded and then driven to the Atlas Trucking Company Warehouse on King Street (Selvin 1996:142).

The maritime strike committee responded by appealing for a massive turnout on the San Francisco waterfront on July 3. Thousands of strikers gathered on the Embarcadero that morning, but were kept away from Pier 38 and King Street by police patrols who barricaded the area with empty freight cars and lines of police cars filled with heavily armed officers (Selvin 1996:144).

Two trucks, manned by young business executives associated with the IA, moved out of Pier 38 under police escort. When the crowd of strikers advanced, throwing rocks and bricks, police beat them back with nightsticks, tear gas and firearms. The battle lasted for four hours, resulting in serious casualties on both sides. The *San Francisco News* reported two strikers shot, and eleven others hospitalized; nine policemen were also injured. Many other strikers refused hospitalization for fear of being arrested (Selvin 1996:144-145; Quin 1949:105-106). Five trucks made eighteen trips between Pier 38 and King Street on July 3, carrying an insignificant amount of cargo, but enabling the IA to declare that "The Port is Open."

Bloody Thursday, 5 July 1934

The decisive battle took place at Pier 38 on the morning of 5 July 1934, after a break for observance of the July Fourth holiday. Four thousand strikers formed a picket line around freight trains loaded with scab cargo. Police threw tear gas bombs into the crowd of strikers, who fled up nearby Rincon Hill. Picketers held the police at bay by pelting them with bricks and bottles, but were forced to retreat by a massive attack of tear gas bombs that set the hill on fire.

Workers on the nearby San Francisco-Oakland Bay Bridge (then under construction) quit work for the day to avoid being hit by stray bullets (Quin 1949:111).

The strikers regrouped in front of the ILA union hall at 113 Steuart Street, a block from the waterfront, a neutral territory which the police had respected in the past. This time, the police

barricaded both ends of Steuart Street and advanced toward the picketers near the corner of Steuart and Mission streets, guns drawn. Hundreds of strikers were gathered there, and some threw rocks at the police. Without warning, the police suddenly opened fire on the crowd, killing two people and injuring many others.

The two men shot and killed by police on July 5 were a longshoreman, Howard Sperry, and a cook Nick Bordoise, a member of the Communist Party who had been working in the ILA's relief kitchen.

By the afternoon of July 5, there were violent clashes along the entire San Francisco waterfront. Royce Brier, reporting the event in the *San Francisco Chronicle* the next day, wrote: "Don't think of this as a riot. It was a hundred riots, big and little, first here now there. Don't think of it as one battle, but as a dozen battles" (Brier in Hinckle 1985:102):

> Blood ran red in the streets of San Francisco yesterday. In the darkest day this city has known since April 18, 1906, 1,000 embattled police held at bay 5,000 longshoremen and their sympathizers in a sweeping front south of Market Street and east of Second Street. One was dead, one was dying, 14 others shot and more than two score sent to hospitals. Hundreds were injured or badly gassed . . . It was a Gettysburg in the miniature, with towering warehouses thrown in for good measure. (Brier, *San Francisco Chronicle* July 6, in Hinckle 1985:101-102)

California's Governor Frank Merriam called out the National Guard to protect the piers and Belt Railroad, which were state property. Major General David Prescott Barrows, commander of the 2,000 National Guardsmen deployed on the waterfront, later described the scene:

> By midnight steel helmeted soldiers were on guard in front of every dock from Fisherman's Wharf to China Basin, equipped with rifles, bayonets, automatic rifles, machine guns. (Barrows in Larrowe 1972:70)

The sight of soldiers stationed every five feet behind barbed wire enclosures prompted a labor organizer to remark that the Embarcadero looked like "a section of wartime France" (quoted in Kimeldorf 1988:106; see also Eliel 1934:111). According to another writer referring to the National Guard, "The First Battalion, 159 Infantry, took over an area from Pier 3 to Pier 31

inclusive. The Second Battalion and Special Units of the Third Battalion were held in reserve at Pier 1" (Kinnard Vol. 2 1966:383).

The overwhelming display of force by the National Guard brought an immediate end to street fighting between strikers and police. In San Francisco, the final toll from Bloody Thursday was two shot and killed, 31 wounded by gunfire, and 78 seriously injured by bricks, clubs or tear gas. Hundreds were arrested (Kimeldorf 1988:101; Cross 1935:255).

Harry Bridges, as chairman of the Joint Maritime Strike Committee, characterized the pattern of violence as "an attack by the shipowners, through the police, on the strikers." His response was quoted in the *San Francisco Chronicle:*

> From the very beginning, the forces of the city and the state have been arrayed on the side of the shipowners. They have instituted a reign of terror under which peaceful pickets have been arrested and beaten without cause. Police departments thus have committed murder and gone unpunished." (Bridges in Kimeldorf 1988:106)

Strike Events in Other Cities

July 5 was a day of violence on the Portland waterfront, too. Police riding a tanker train en route to the waterfront opened fire on picketers gathered along the route. Two men were wounded by gunfire, and the crowd responded with their fists. The fight raged into the night and continued the next afternoon, punctuated by tear gas attacks by the police upon the striking workers. A few days later, four Portland strikers were seriously wounded by police gunfire (Kimeldorf 1988:107-8).

On July 18-19, Seattle police lobbed teargas bombs at strikers gathered on railroad tracks leading to Piers 40 and 41, leading to a confrontation resulting in serious injuries to three longshoremen and three policemen, and minor injuries to many other strikers (Kimeldorf 1988:109).

Funeral for Labor Heroes, 9 July 1934

Tens of thousands of mourners gathered in San Francisco on July 9 to honor the martyrs Sperry and Bordoise. Their caskets were placed on open trucks banked with flowers, and a small union band on another flatbed truck struck up Beethoven's funeral march. Thousands of silent

marchers followed the trucks in a silent procession that stretched almost two miles from the Ferry Building up Market Street to 7th Street. After the violence of the previous few days, the power and dignity of the occasion overwhelmed everyone who saw it. It was the total silence of the marchers, above all, that stunned the huge crowd assembled along the route. The crowd fell silent too as the marchers walked slowly by. One participant recalled:

> The sound of thousands of feet echoed up that hollow canyon — nothing else . . . It was a magnificent sight — those careworn, weary faces determined in their fight for justice thrilled me. I have never seen anything so impressive in all my life. (quoted in Nelson 1988:133)

The silence of the funeral procession somehow united the marchers and the crowd in a way that placards, slogans, and speeches never could. It was a thrilling display of working class solidarity that sent a surge of new energy through the labor movement.

An employer spokesman who observed the funeral march understood its dramatic power. Industrial Association research director Paul Eliel wrote:

> It was one of the strangest and most dramatic spectacles that had ever moved along Market Street. Its passage marked the high tide of united labor action in San Francisco. Its dramatic qualities moved the entire community without regard to individual points of view as to the justice and righteousness of the strikers' cause. It created a temporary but tremendous wave of sympathy for the workers. (Eliel 1934:128)

San Francisco General Strike, 16-19 July 1934

The profound atmosphere of the funeral seemed to many observers at the time a prelude to a general strike. When first proposed by longshoremen and their allies, the general strike had been viewed as too radical, even within the labor movement. Now, in the midst of a rapid series of overpowering events — Bloody Thursday, the calling of the National Guard, and the funeral — the general strike appeared inevitable, as Eliel acknowledged (Nelson 1988:149):

> As the last marcher broke ranks, the certainty of a general strike, which up to this time had appeared to many to be the visionary dream of a small group of the most

> radical workers, became for the first time a practical and realizable objective. (Eliel 1934:128)

Bridges appealed to the teamsters union to join forces in a general strike. "The entire labor movement faces collapse if we maritime workers are defeated. If you fellows join us, you will double our power" (Bridges in Larrowe 1972:77).

The teamsters were almost unanimous in their vote for the general strike. During the week of July 9-13, many other San Francisco unions held special meetings and followed the teamsters' example. The issue was decided on July 14, when representatives of 115 unions met as members of the San Francisco Labor Council and voted in favor of the general strike (Larrowe 1972:77-78).

The general strike was a protest against the use of police to open the port, against the killings on July 5, and against the National Guard troops now stationed on the waterfront. Though been called in to restore calm, the presence of the National Guard on the waterfront, complete with machine guns nests and tanks, meant that strikebreakers could work without interruptions from picket lines or strikers (Cross 1935:255; Kimeldorf 1988:107; Cherny 2005).

The general strike also had a much broader and more urgent agenda — support for the besieged maritime unions, and counter-attack against the Industrial Association and their allies in the police department.

Labor historian Ira Cross, completing his book on California labor history at the time of the strike, observed that "organized Labor in San Francisco was fighting for its right to exist" (Cross 1935:258). U.C. Berkeley economists Paul S. Taylor and Norman L. Gold summarized the strikers' position in an article published in September 1934:

> . . . to the strikers, confident and more impassioned than ever, the situation seemed clear; the employers had finally used their last resource — their own strength first, then the police, the Industrial Association and the militia; now the men must win enforcements for the final test of power. From the waterfront through the ranks of organized labor and to the public went the appeal for support of a general strike. (quoted in Cross 1935:258)

Harry Bridges would later say that the general strike was a response to Bloody Thursday. The general strike "was brought about by us and deliberately planned by us as a mass protest against the killing and murder of the men on the waterfront" (Bridges in Larrowe 1972:78).

Bridges explained labor strategy for the general strike:

> When we organized for the general strike and put the leaflets out all over the country, some two hundred thousand-odd, the leaflet contained the fact that there would be no attempt to interfere with things such as lights, electricity or gas, there would be no attempt to interfere with the movement of foodstuffs, the operation of creameries or bakeries, but all of those other things were going to be struck, and that is the way it eventually worked out. Of course the city took the opportunity to cry a lot about taking over the country and taking over the city, and all that, and set up an emergency state of affairs, but it wasn't necessary. (Bridges in Larrowe 1972:79)

At least 100,000 workers participated in the historic general strike from July 16-19, not only in San Francisco, but in Oakland and other parts of Alameda County. It was the culmination of a working class solidarity that had been growing since the start of the longshoremen's strike in early May.

Striking maritime workers in Portland, Seattle, and San Pedro focused their attention on San Francisco, amid threats that the general strike would spread throughout the coast if the waterfront strike dragged on without resolution (Selvin 1996:186).

Strikers set up picket lines on highway approaches to the city, and only people approved by the strike committee were allowed access. Factories shut down, most stores and restaurants were closed (although big department stores remained open), and many streetcars stopped running.

Thousands of additional National Guard troops were stationed in the city, Police Chief Quinn recruited five hundred more policemen, the Industrial Association issued "red scare" bulletins warning of violent revolution, and the *San Francisco Chronicle* warned of a communist take-over and civil war.

The first day and a half of the strike were calm, but on July 17 the police and unidentified

vigilantes, sometimes supported by National Guardsmen, raided the Marine Workers Industrial Union, the ILA soup kitchen on the Embarcadero, and a number of other sites connected to the strikers or the Communist Party, typically breaking up the furniture and office equipment, after which the police made arrests -- about 450 in total. (Cherny 2005)

The general atmosphere of the strike was not violent, however. Some have described the general strike as a time of celebration among the rank and file. The workers celebrated their own courage and discipline in waging a battle against employers allied with the city's most powerful corporations, the police force, the governor, and the National Guard. Paul William Ryan, a Communist publicist who wrote under the pseudonym Mike Quin, claimed years later that in the city's working class neighborhoods, "an almost carnival spirit" appeared during the general strike. "Common social barriers were swept away in the spirit of the occasion. Strangers addressed each other warmly as old friends" (Quin 1949: 148; Cherny 2005).

The San Francisco general strike, led by the San Francisco Labor Council, lasted four days, ending without any clear settlement in the works for the striking maritime workers. The uncertain outcome was described by historian Bruce Nelson:

> The premature and inconclusive termination of the general strike left the maritime workers in a difficult position. After nearly two and a half months on strike, literally thousands of arrests, at least six deaths, and hundreds of serious injuries, the men and their families were still holding the line. But their allies were gradually cutting the ties of solidarity that had been the strike's lifeblood. When the teamsters voted to return to work unconditionally, the maritime strikers were once again on their own. (Nelson 1988:150)

In the meantime, on June 26, President Franklin D. Roosevelt had appointed an arbitraton board for the longshore strike. During the general strike, John Francis Neylan, a power within the local Republican party and the attorney for William Randolph Hearst, together with Michael Casey of Teamsters Local 85 and other leaders among business and the Labor Council (but not Bridges and the militants), cobbled together a rough and at time ambiguous framework for a settlement that was not written down anywhere and may not even have been agreed to by all the participants. The central elements apparently included an end to the general strike, arbitration of the longshore strike including the issue of hiring halls, bargaining and if necessary arbitration of the seagoing unions' issues. Thus, the Pacific Coast maritime strike came to an end after 83 days, when both sides publicly agreed to arbitration by a board appointed by President Roosevelt. Longshoremen returned to work on July 31 while the arbitration board conducted

hearings on the matter in San Francisco, eliciting expert, impassioned testimony from both longshoremen and employers' representatives (Selvin 1996, 205-209; Nelson 1988:129; Cherny 2005).

Arbitration of Maritime Strike, July–October 1934

In the immediate aftermath of the strike, some employers rejoiced, predicting a quick return to pre-strike conditions on the waterfront. William H. Crocker, whose Crocker National Bank was a prominent member of the Industrial Association, viewed the strike as a "marvelous investment" that would solve the "labor problem" once and for all.

> This strike is the best thing that ever happened to San Francisco. It's costing us money, certainly. We have lost millions on the waterfront in the last few months. But it's a good investment, a marvelous investment. It's solving the labor problem for years to come, perhaps forever . . . Labor is licked. (Crocker in Nelson 1988:156)

The workers' demands were still on the table, awaiting resolution. But the momentum of the strikes had given the longshoremen a new confidence, too. "Somehow or another, the men discovered that . . . they had terrific power; they also had some courage and they changed the working conditions immediately," recalled longshoreman Henry Schmidt, an original member of Albion Hall and a close ally of Harry Bridges (Schmidt in Kimeldorf 1988:111).

West Coast longshoremen seized the initiative during the two-and-a-half-month arbitration period (July 31-October 12), staging twenty-nine different job actions to change work rules to their own advantage and purge the ports of former strikebreakers (Kimeldorf 1988:111).

Historian David Selvin described the significance of the longshoremen's job actions during a tense interval of uncertainty:

> Almost from the moment the longshoremen returned to the docks, and without waiting for formal arbitration, they confronted the job conditions that underlay their eighty-two day walkout. Rank-and-file job action, a ship or a dock at a time, undertook to deal piecemeal with sling loads they considered excessive, manning they considered inadequate, and work practices they considered unsafe — the

> chief determinants of the pace, the difficulty, and the hazards of their work. (Selvin 1996:237)

Labor's "new and militant spirit" could be seen not only in the workplace but inside the longshoremen's union organization. Harry Bridges was elected president of the San Francisco local of the ILA by an overwhelming margin, just one of many election victories for insurgents in Pacific Coast ILA locals.

Ship owners, as unyielding as ever, were nevertheless quick to see a new power in their opponents. Industrial Association representative Paul Eliel later acknowledged that employers were "faced with a revolution in the thinking of their men." Firms that "attempted to operate as they had in the past found a new and militant spirit " on the waterfront (Eliel in Kimeldorf 1988:111).

Thomas Plant, president of the Waterfront Employers Association, recalled that in the immediate post-strike period there was a shocking disappearance of the "old order," as he and other longshore employers, confronted with an emboldened longshore union, came to terms with their own loss of power. He sketched a stark contrast between the "old" pre-strike longshore union and the "new union" in a speech to employers in 1940:

> Most of us heaved a big sigh of relief, and felt that the old peace and order would soon be restored. But the old order had changed. The old union had said to us, "We believe our interests are common with yours; we will cooperate with you in every way; we will produce more work and will try in every way to make your business profitable so you can pay us better wages." . . . The new union was to say to us, "We believe in the class struggle, that there is nothing common between our interests and yours, therefore, we will hamper you at every turn, and will do everything we can to destroy your interests, believing that by doing so we can advance our own." (Plant quoted in Selvin 1996:240)

The 1934 Maritime Strike Settlement

The National Longshoremen's Board appointed by Roosevelt announced its longshore arbitration award on 12 October 1934. It was a sweeping victory for the union, which won all its major demands: the first coast-wide contract in history, a hiring hall jointly operated but with a

dispatcher elected by union members, with rotary dispatching and no discrimination, a six-hour day, a thirty-hour week, a wage increase, and union-management grievance machinery (Fairley 1979:9).

Longshore Labor Relations After the 1934 Strike

Hiring Hall Won through 1934 Arbitration

The 1934 strike completely transformed labor relations between West Coast longshoremen and their employers. Before 1934, the employers in San Francisco, through the shape-up and the Blue Book Union, had total control of longshore working conditions.

After the 1934 strike, Pacific Coast longshoremen had the hiring hall, which had been their central demand since 1933. Employers had tried to counter the longshoremen's insistence on a hiring hall by arguing before the National Longshoremen's Board that "the granting of this demand would constitute almost a death blow to the shipping industry upon this coast" (Phleger 1934:39).

The National Longshoremen's Board did not give the ILA the unilateral control of the hiring hall it sought, but it gave the union effective control. The hall was to be jointly administered by the union and the employers. However the union had direct, onsite control of hiring through its annual election of dispatchers who actually handed out job assignments on a strict rotary basis. Jobs were assigned according to the principle of "low man out," meaning that the union member who had worked the fewest hours so far in the month was the first to be assigned to work. Only after all union members had been assigned to work would the dispatcher turn to casuals, who were not full members of the union. Since a longshoreman had a right to refuse a job, he was in a sense choosing his employer, instead of having the employer choose him (Wellman 1995:60; Larrowe 1955:143).

The old shape-up was overthrown and in its place was a hiring hall providing an equitable distribution of work. Instead of gathering outside the Ferry Building every morning "like sheep," as Bridges would say, longshoremen assembled at their hiring hall at 27 Clay Street, near the Embarcadero. (In 1959, the hall moved to its present site near Fisherman's Wharf; the old Clay Street hall is no longer standing.) The hall became the heart of the longshore community,

the center of a vibrant social and political life enjoyed by longshoremen after the 1934 strike. In later years, longshoremen would often say that that "the union *is* the hiring hall" (Mills and Wellman 1987:174-175; Wellman 1995:60).

Speed-Up as a Post-Strike Issue: Significant Union Gains by 1937

Having won control of hiring, the longshoremen sought other changes in work rules and working conditions. The speed-up issue had resurfaced after the strike, as one of the principal grievances cited by longshoremen in their testimony before the National Longshoremen's Board in charge of strike arbitration.

The speed-up issue was not resolved in the 1934 arbitration, but by job action after the strike. From 1934 to 1937, longshoremen used their new contract provisions to stage hundreds of quickie strikes, slow-downs and other job actions to control hours and safety measures. They sought to control the pace of work, for example, by imposing limits on sling load weights. From 1934 to 1936, there were more than 90 work stoppages, almost half of them in San Francisco, to impose sling load limits and the pace of work (Mills and Wellman 1987:171-172; Fairley 1979:12; Kimeldorf 1988:111-113).

Employers reacted bitterly to this overwhelming display of union initiative and to their own loss of control of longshore working conditions. Thomas Plant, president of the Waterfront Employers Union, complained that since longshoremen had gained control of the job, "without exception every terminal on the waterfront has reported a considerable drop in efficiency and unquestionably, it is deliberate." Almon Roth, the president of two ship owners' associations, admitted that "there was a day when employees complained of speedups." But now, he said, "the pendulum has swung the other way. Today employers suffer from deliberate slow-downs" (Plant and Roth in Nelson 1988:159-160).

By 1937, the longshoremen's campaign for safe and realistic work rules had made great progress. After another major, three-month-long strike in late 1936 and early 1937, the union won a contract provision prescribing in detail, by commodity, the maximum number of bags, boxes, barrels, etc. which could be hoisted into or out of the ship in any one load. There was a coast-wide general sling load limit for all cargoes set at 2,100 pounds. This was a significant

breakthrough for the union. Previously, longshore gangs had handled loads weighing 3,000 pounds and more. Until the 1937 contract, the limits varied from port to port, but in that year the union succeeded in getting a uniform set of limits written into the coast contract. The 1937 limits remained unchanged until the adoption of the Mechanization and Modernization Plan in 1960 (Finlay 1988:45-46; Fairley 1979:12).

Harry Bridges proclaimed the achievement of sling load limits as a great union victory:

> Before the strike the longshoremen were slinging two or three tons. Now the union has cut this down . . . We forced those conditions on the docks . . . We won those conditions through our strike. We won them by fighting on the job . . . If the Union conditions are violated, everybody including other marine workers, walks off the job . . . (Bridges, in an address to the ILA, quoted in Liebes 1942:92)

The issue of safety was explicitly addressed in the 1937 contract, in a series of emphatic warnings:

> If it is a question of convenience vs. safety—"Safety First!"
> If comfort vs. safety, then again — "Safety First!"
> If tonnage vs. safety, then again — "Safety First!"

In 1940, a new agreement created a process of immediate arbitration of disputes over working conditions. The contract recognized the right of the men to stop work if they felt it endangered their health or safety. In such a circumstance, a port arbitrator was to be 'immediately summoned' to the site, to make a decision on the spot, a decision that was binding on both workers and employer. This system of arbitration, which continues with only minor modifications to the present, may well be unique among dock workers worldwide (Fairley 1979, 17-18; Cherny 2005).

Significance of the 1934 Strike

Labor historian Bruce Nelson described the 1934 strike (known as the Big Strike) as "one of the great battles in the history of the American working class . . . an eighty-three-day drama [that] transformed labor relations in the Pacific Coast maritime industry and ushered in an era of militant unionism . . ." (Nelson 1988:127).

Pacific Coast longshoremen played a leading role in the "eighty-three day drama." It was their coastwide walkout in early May 1934 that triggered the wider maritime and general strikes. And it was a longshoreman, Harry Bridges, who led the 1934 maritime strike committee and was a leading spokesman for maritime unions throughout the 1930s.

Sociologist Harold Kimeldorf described the 1934 strike in San Francisco as a model for labor organization throughout the country in the 1930s:

> In their leftist leadership, mass participation, and confrontational tactics, [the strikes] set a pattern that was to become the dominant expression of working class struggle for the remainder of the decade, paving the way for the organization of basic industry and the rise of the CIO. (Kimeldorf 1988:100)

Sociologists Herb Mills and David Wellman emphasized the regional impact of the strike: "The modern West Coast labor movement was born in 1934 with a coast-wide maritime strike which culminated in a general strike in San Francisco . . ." (Mills and Wellman 1987:171).

The militancy and courage of the longshoremen were an immediate inspiration to workers on the West Coast. Pacific Coast warehousemen joined the longshore union in 1934. Workers in a range of other industries — seafarers in California, fishermen in Alaska, and loggers in the Northwest — had significant union victories after the 1934 strike (Kimeldorf 1988:100).

The inspiring example of the maritime strike reached beyond the Pacific Coast, ushering in an era of class solidarity and confidence among workers around the country:

> The sheer energy of the maritime unions' militancy helped powerfully to inspire thousands of workers in nearly every kind of industry and business to make no less sweeping changes on their own jobs and in their relations with their employers, not only in the San Francisco Bay Area and in the port cities of the Pacific Coast but also across the land. With astonishing vigor, workers grasped the hope and, increasingly, the reality of a new day. They left behind the dilapidated, impoverished state to which the 1920s and the Great Depression had brought them and acted from a new awareness of common grievances and common purpose, a newly recognized class identity. (Selvin 1996:18)

While the Port of San Francisco was not the only place where activities of the 1934 strike occurred, it represents the actions and importance of the strike as a whole. Other sites associated with the strike, such as union halls, the site of the killings, the route of the funeral march on Market Street, other ports and the Pacific Coast, and other union employers where the strike took place, all have more limited value in relation to the whole. The strike began among the longshoremen in the district. When San Francisco's port was shut down, it galvanized other workers. The closed port by itself had repercussions in virtually every segment of the city's economy. The closed port was the symbol of the strike to outsiders.

Pile Drivers

See also Pile Driving Rigs – Section 8 (Lost Feature)

The pile drivers (mechanical equipment) are included in the text because of their association with the district. However, they are not listed as contributors to the district, pending further review and assessment of integrity, perhaps by a historian of technology. In addition, they do not appear to be contributors to the district because they do not belong exclusively to the district. The floating pile drivers were built to be used on all of the port's facilities including the many piers along the city's shoreline south of the district — and were still in use in 2003.

Introduction

History of the Use of Pile Drivers

Wooden piles were driven into the mud for waterfront walls, piers and other structures by the Romans in ancient times. Pile driving in the Roman Empire was slow, hard, manual work by slave labor, perhaps assisted by animal power. For centuries, the same technology was employed with cheap labor whenever harbor works were built. The Dutch used manual pile drivers in seventeenth century New York. The British and others in northern Europe used them to build vast and impressive docks in the late eighteenth and early nineteenth centuries.

Steam-driven pile hammers were invented by a Scottish mechanical engineer, James Nasmyth, in 1839; the early prototype was used for iron forge work, but was adapted for pile driving and introduced in 1845 at the Royal Navy Devonport Dock in Plymouth, England. With the use of

steam power, a mechanical hoisting engine raised and dropped the hammer to drive the piles. Pile men, seamen and loggers later called the engines "donkeys." Before that time, pile driving was performed with hand-operated equipment, supplemented by horse power (Green 1993:386-387; Munoz 1986:12).

The first steam pile hammer received a dramatic introduction at the Devonport Dock with the staging of a friendly competition between the old and new methods. Contemporary observers reported that the new steam pile hammer could drive a 70-foot pile in four and a half minutes, while the old method of hand-operated machines took twelve hours (Green 1993:386-387; Munoz 1986:12).

> The enormous increases in productivity with the use of steam hammers revolutionized pile driving. But the new method was not adopted everywhere overnight. Most of the early construction work on the seawall in San Francisco, from 1868 to 1873, was performed by hand labor. (Munoz 1986:15)

The first record of pile drivers at the port of San Francisco was in 1888: "The Board now owns two pile drivers (one scow and one top driver)" (BSHC 1888).

Drop hammers driven by steam were introduced at the turn of the last century. For many years these were powered by fuel oil. After World War II they were powered by diesel fuel. These were used at the Port of San Francisco until 2002-2003. A second type of pile driver, a diesel powered hammer, was also used in recent decades. The diesel powered hammer is still being used, but modern pile driving involves equipment using compressed air, electricity, vibrators, hydraulic jacks and water jets (Chellis 1961:74-75; Green 1993:387).

In 1909, the Board of State Harbor Commissioners authorized its staff "to purchase or construct pile drivers, and the necessary machinery to be used therewith, and employ men for operating the same" (Ryan 1914:11).

Beginning in 1924, the Biennial Reports of the Board of State Harbor Commissioners regularly recorded actions and employment relating to pile drivers. In 1924 the Biennial Report stated: "As in the past the major part of the maintenance and repair work on the waterfront structures

was done by our own organization. This has necessitated the continuous employment of three pile driver crews, one top crew and the regular force of carpenters, painters, plumbers, and other mechanics" (BSHC 1924:54). In 1926, the need for work by pile drivers had increased — 54 "pilemen" were employed by the Board of State Harbor Commissioners (BSHC 1926:18, 58). In 1928, the Biennial Report stated that "the board operates six pile drivers" (BSHC [1928]:15). In 1930, an inventory of equipment listed eight "pile drivers;" Driver No. 1, No. 2, No. 3, No. 4, No. 7; Derrick No. 8; and Oil Barge No. 9 (BSHC 1931:71). Similar reports were made by the Board of State Harbor Commissioners until 1936.

Pile Driving Workers

Longshoremen's leading role in the Big Strike of 1934 (see Labor section) has drawn the attention of generations of scholars, labor experts, writers and filmmakers. But the San Francisco waterfront has many unsung labor heroes, too. Among them are the pile drivers who built and repaired the port's piers and pier decks, and other waterfront structures. Pile drivers participated in the 1934 maritime strike, and have a history of alliance with longshoremen and seamen in maritime federations dating back to the late nineteenth century (Munoz 1986:22-23; Munoz 2002).

Unlike longshoremen and seamen, however, pile drivers have not published a substantial labor literature of their own, and they have received scant attention from scholars and writers (Green 1993:364):

> All crafts — skilled and unskilled — as well as those judged demeaning in contrast to those prized — hold dramatic elements. However, not all work is blessed with compelling novels or memorable films. Countless tasks remain hidden to the writer, artist, or documentarian. Pile-driving crews, which construct waterfront docks, shore freeway bridges, or underpin city skyscrapers, are neither subjects within popular fiction nor screen heroes; they have also eluded labor economists and social historians. Clearly, pile work is as significant as that of the seafaring whaler or steamboat pilot. Perhaps a Melville or a Twain will yet emerge to discover the pile rig; meanwhile, its toilers (pile butt, pile buck, or pile doe in their vernacular) continue to craft legends and treasure lore.

There are only two, relatively brief, historical studies of pile driving workers in California — a 1986 booklet written by Bay Area pile driver Michael Munoz, and a portion of a 1993 book of laborlore by folklorist Archie Green. The following discussion relies heavily upon these two sources, along with oral history interviews conducted for this report with Michael Munoz, Art Quint, Guadalupe Thomas, Rick Johnson and Gary Lee (Munoz 1986; Green 1993). Art Quint worked as a pile driver on the San Francisco waterfront from 1939 to 1984, at first with Healy Tibbits Construction Company; he started working for the Port of San Francisco in the 1950s and retired as Superintendent of Harbor Maintenance. In 2003, Guadalupe Thomas was the Superintendent of Harbor Maintenance at the Port of San Francisco. Rick Johnson (engine operator) and Gary Lee (spool tender) are pile drivers who work for the Port of San Francisco.

General Description of Pile Driving Work

Pile drivers are known, both within and outside the union, by their occupational nickname, "pile butts." The butt is a discarded pile end. Pilings are driven into bay mud, and then their tops, or butts, are cut to conform to the right elevation, as Green explains. "This constant and necessary butt cutting somehow led to a verbal shorthand" (Green 1993:375).

The nickname was first used in California in the early 1930s, and appeared in union local documents in the early 1940s. The nickname conveyed pride and power in the work, although some members at first believed it to be undignified (Green 1993:424-426).

Pile driver Michael Munoz provides a good introduction to pile driving work:

> Work as a pilebutt can best be described as heavy construction involving specific skills in the area of piledriving, rough carpentry, cutting and welding. Pilebutts generally perform foundation work on large construction projects such as piers, wharves, drydocks, breakwaters, underwater pipelines, bridges, highways, skyscrapers and parking lots. They are also called upon to reconstruct, repair, maintain and even demolish existing structures. Whether constructing, maintaining or demolishing structures, their work is generally very strenuous.
>
> Pilebutts perform all heavy labor, skilled and unskilled, incidental to their work. They load and unload their broad gauge lumber, construction forms and pilings up to eighty or more feet in length. They manhandle, rig, erect and drive wooden,

> steel and cement pile. They construct, move, set and scale all the forms and shapes used in the laying of cast-in-place structures. They construct, climb and demolish wooden and metal falsework. They shore and brace any excavations undertaken in connection with their work.
>
> During demolition work, they perform all actual deconstruction with cutting torches, jackhammers and power saws. They also do any rigging and loading work associated with the removal of debris. They perform this work on a variety of maritime and shoreside locations including barges, work floats, tugboats, wharves, piers, pontoons and foundation excavations. Because their work usually occurs during the early stages of construction, the sites are often unprepared, uneven and ungraded.
>
> For the individual workers, these duties translate into physical evolution involving repeated bending, stooping, lifting, carrying and climbing. Pilebutts routinely work with heavy hand-held equipment and outsized material. They are often required to make unassisted individual lifts in excess of one hundred pounds . . .
>
> Bending and stooping, often for prolonged periods, are also a routine part of the work. Pilebutts are also required to climb. They must scale piledriving leads, the track upon which the driving hammer runs, up to one hundred and twenty feet tall . . .
>
> There is no light duty as a pilebutt. While the men are always happy to carry an injured man for a few days, there are no sheltered positions where he can safely spend the rest of his professional life. In order to obtain work out of the Hall, a member must be able to perform all the duties of his trade. (Munoz 1986:43)

Waterfront Pile Driving in the 1930s, and Its Health Hazards

A waterfront pile driving job started with test piling, to determine how far a pile would have to be driven to reach bedrock or another appropriate depth for the task at hand. That test would determine the length of the pile to be driven. Waterfront piles were made of Douglas fir, a widely available western tree that grows tall and straight, and is moderately resistant to decay. Civil engineer Robert Chellis describes Douglas fir as “excellent” for pile construction. Piles used on the San Francisco waterfront piers were typically 4 to 16 inches in diameter and from 40 to 100 feet long. The root end of the tree (the pile butt) was the top of the pile where the hammer

would strike; and the top of the tree was the point end that was driven into the bay mud (Chellis 1961:223; Quint 2002; Johnson and Lee 2002).

After piles were driven with a steam hammer, they were capped and braced with an x-frame. Then stringers were put on top of the cap. Pile drivers would then build the pier deck, also of Douglas fir. The piers were designed by port engineers, who would often consult with pile driving foremen on design, construction, and maintenance (Quint 2002).

Pile driving work was a very tough job — strenuous, dangerous, and noisy. Green quotes a pile driver who lasted only a year. "For both mental and physical reasons, work on pile drivers did not agree with me . . . and the constant hammering and shaking make me feel as if I was getting punch drunk" (Green 1993:432).

Pile drivers with a greater tolerance for the hammer's noise were nevertheless exposed to a health hazard that most were completely unaware of. There were no safety rules about the health effects of constant hammering, and no precautions were taken to prevent damage to the ears. As an unfortunate consequence, many pile drivers have suffered substantial hearing loss (Quint 2002).

> The pile drivers' job was not over after the piles were driven; it involved continual repair and maintenance of the wood piles, subject to the frequent impact of boats and damage by wood-eating worms known as teredoes, and other "grubs." (Chellis 1961:350).
>
> The destructive appetites of the teredoes provided a steady source of employment for pile drivers. Green recalls an old pile butt saying, " The pile grub is the pile butt's best friend." (Green 1993:426; Chellis 1961:350)

Piles were treated with creosote to prevent teredo damage. Creosote, applied to the piles before delivery to the waterfront, was a hazardous material that burned the skin and eyes of many pile drivers. There were no safety guidelines about handling creosoted piles on the job; "some guys wore gloves and some guys didn't." The old piles on the waterfront still have creosote in them, though the substance was banned within the last ten years (Munoz 2002; Quint 2002).

Repair of the piles was often done by lifting them a prescribed length from the bay mud, and cutting them off; they were driven so deep that they have length to spare for this kind of maintenance work (Thomas 2002; Johnson and Lee 2002).

Most of the repair work, however, was focused on the fendering system of the pier. Guadalupe Thomas, Superintendent of Harbor Maintenance at the Port of San Francisco, describes the fendering system as a buffer that protects the main structure of the pier from boat impacts. It is "sort of a sacrificial area of the pier." The fendering system is composed of a series of vertical piles and horizontal "chocks," today usually made of eucalyptus wood.

Pile Driver Work Crews

Until they were taken out of service in 2002-2003, Pile Drivers #2 and #3 were operated in very much the same way as in the 1930s. Each pile driving crew had six or seven men plus a foreman. Each man had a particular place and job, although every pile driver was trained in every aspect of the work.

The front end man (also known as the head end man) directed the location of the driving operation, and monitored the operation from the deck, during stabbing of the pile. Sometimes he gave signals to the engine operator.

The engine operator moved the hammer up and down by working the engine. He was positioned on the starboard (right) side of the engine in the deck house. He depended on signals from either the front end man or the foreman.

A spool tender positioned the driver in different directions using an engine-driven spool or shaft. A rope, up to two inches in diameter, was wrapped around the steel spool, which could move the driver forward, back, and side to side. The spool tender worked inside the deck house, on the port (left) side of the engine, where the spools were located.

The loftsman climbed the guards (rungs) of the 90-foot tower to visually orient the pile. He did all the work above the deck of the rig. He guided and worked the pile during driving. He typically worked thirty to fifty feet above the pier deck, depending on the length of the piling.

Often a brakeman was positioned at the back of the rig. Other men had different jobs — running out lines, heading the piling, or preparing the piling to fit into the leaders.

A team of three divers, members of the pile drivers union but in a different crew, typically wrapped the piles after the driving was done, and carried out underwater inspections (Quint 2002; Johnson and Lee 2002).

Pile Driver Labor Organizations

The first pile drivers labor union in San Francisco was the Wharf Builders' Union, organized in 1883. It received a charter from the American Federation of Labor in May, 1901, becoming the Pile Drivers and Bridge Builders Union No. 9078. It was an independent local union for the first few years. But in 1904 the A.F.L. leadership assigned the San Francisco local into the international union that had jurisdiction over their work — the International Association of Bridge, Structural and Ornamental Iron Workers (Munoz 1986:27; Green 1993:421).

The San Francisco pile driver union's new status within the mainstream union movement was recognized with a new name: Pile Drivers, Bridge and Structural Iron Workers Union No. 77 (Munoz 1986:27; Green 1993:421).

In 1911, Local 77 drafted an ambitious program of working rules for pile driving in California. It included work the pile drivers were already performing as well as work they intended to claim as their own. Labor historian Archie Green cites the document in his discussion of pile driver history. The first item on the list was the most pertinent for the purposes of the present study: "Construction, reconstruction, repairing, removing, and wrecking of wharves, piers, docks, bridges, viaducts, towers, masts . . . Pile driving in all its branches; Cutting off and capping of piles, abutments, foundations, submarine or other work . . . Operation of all derricks, tools or machinery necessary in performing any of the aforesaid work." Green recognizes the document as the work of "proud, tough craftsman . . . I am a pile driver because I hammer, cut, cap, lift, place, climb, crawl, bend, burrow, dig, dive. My command of work shouts identity. My daring deeds contribute to the human endeavor. I am that which I do!" (Green 1993:367).

From 1917-1920, pile driver union locals throughout the country were taken over by the United Brotherhood of Carpenters and Joiners, affiliated with the A.F.L. In San Francisco, the transition took place in May 1920. Pile Drivers, Bridge and Structural Iron Workers Local No. 77 in San Francisco, which had about 800 members, became Local 34 of the International Brotherhood of Carpenters and Joiners of America (Munoz 1986:30-35; Green 1993:421).

Although after 1920 they were part of the same international union as carpenters, pile drivers had separate union locals, and separate jurisdictions on the waterfront. Pile drivers built piers and pier decks. After the deck was finished, the carpenters' union would take over to build the pier sheds (Munoz 2002).

One of the important leaders of Local 34 was Jack Wagner, who served as the union business agent for twenty-five years, starting in the late 1930s. He had begun his career as a union activist during the 1934 maritime strike, joining other picketers during the siege of Rincon Hill on Bloody Thursday. Wagner joined the Pile Drivers' Local 34 in 1934 and worked on construction of both the Golden Gate Bridge and San Francisco-Oakland Bay Bridge. He was a social unionist, a self-defined radical who believed in a strong rank and file, racial integration of the workforce, and followed the industrial unionist principles of the CIO (Munoz 1986:41; Green 422).

CRITERION B

LABOR: HARRY BRIDGES AND THE 1934 STRIKE

Significance

The Port of San Francisco Embarcadero Historic District is eligible for the National Register of Historic Places under criterion B in the area of Labor, at the national level of significance, for its association with Harry Bridges, leader of the 1934 Big Strike. A national survey in the mid-1980s found only two San Franciscans sufficiently noteworthy to be included among the most prominent Americans of the 20th century--A.P. Giannini (the founder of the Bank of America) and Harry Bridges. (Information contained in the Criterion A, Labor Significance and Background sections on the 1934 strike relates directly to the significance of the district under criterion B in association with Harry Bridges.) Bridges was a leader of the revived San Francisco branch of the International Longshoreman's Association (ILA) in 1933 and was elected chairman of the local's Strike Committee in 1934. As 10-15,000 longshoremen and another 6,000 members of seafaring unions struck in California, Oregon, and Washington successfully struck for 83 days, seeking better hiring and working conditions, Bridges emerged as the voice of the most militant faction.. Toward the end of this period, following intensified efforts to break the strike, Bridges helped to persuade other San Francisco unions to undertake a four-day general strike involving almost all unions in San Francisco, during which business and transportation came to a halt in the city. Bridges' leadership affected work on the wharves and piers up and down the waterfront within the district. The district is eligible at the local, state, and national levels of significance because Bridges was the leader of significant strike activities locally (in San Francisco), across the state (in the Bay Area, Los Angeles, and San Diego), and across state boundaries (in Oregon and Washington) .

Harry Bridges was an Australian-born longshoreman and union leader in San Francisco who helped to lead the ILA and other maritime unions in a long and successful strike in 1934. His achievements are inseparable from those of the strike itself. The 1934 Big Strike was one of the most spectacular victories in American labor history. It produced one of the few general strikes, and San Francisco was the largest American city to be so completely shut down by a general

strike. The 1934 strike led to a generation of strong unions in San Francisco. According to labor historian Bruce Nelson, the Big Strike was "one of the great battles in the history of the American working class . . . an eighty-three day drama [that] transformed labor relations in the Pacific Coast maritime industry and ushered in an era of militant unionism" (Nelson 1988:127). According to California historian Kevin Starr, "The 1934 strike galvanized organized labor across the United States, setting in motion an intense period of organization that resulted in the emergence of the Congress of Industrial Organizations as a powerful, militant presence in American labor" (Starr 1996:118).

The Port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion B in the area of Labor for its association "with the lives of persons significant in our past" (United States Department of the Interior *Bulletin 15* 1991:14). The district is associated with Harry Bridges, an important labor leader. The period of significance is 1934, the year Bridges first emerged as a labor leader. Bridges worked in the district as a longshoreman and the strike activities which he helped to lead affected work on the wharves and piers in the district. Although Bridges was also associated with union offices (at 113 Steuart Street during the strike and elsewhere before and after the strike), with sites of specific events during the strike, with sites of other significant events during a long and productive life, and with various residences, no other site represents the major event of his productive life and his role in the Big Strike of 1934 — as well as the Embarcadero Historic District. Although his association with the Big Strike was relatively brief — about three months, as compared to 40 years as a union president — this event was of preeminent importance in his life. Although others made important leadership contributions to the Big Strike, Bridges is widely considered to have been its single most important leader. The district is significant because of Harry Bridge's association with labor history in San Francisco, labor history in California, and labor history in the United States.

Background

Biographical Information on Harry Bridges

Harry Bridges (1901-1990) was born in Australia and came to San Francisco as a sailor at the age of 19. After a period working on ships, in the American coastal trade he returned to San

Francisco in 1922 and began to work on the docks. As a longshoreman he was forced to join the Longshoremen's Association of San Francisco — a union that was subservient to waterfront employers and was called the Blue Book union by its unwilling members. Bridges struggled against the Blue Book union, often refusing to pay dues. After the National Industrial Recovery Act was passed in 1933, guaranteeing the right of workers to join their own unions, Bridges joined the newly established Local 38-79 of the International Longshoremen's Association (ILA). Bridges led a militant faction within Local 38-79which soon emerged into local leadership and conducted a successful job action against Matson Navigation Company for firing four union workers in early 1934. (Cherny 2005)

In 1934, Bridges emerged as the most important single leader in strike by 10-15,000 longshoremen and some 6,000 maritime workers in California, Oregon, and Washington who were seeking higher wages, shorter hours, more control over their working conditions, and above all a union hiring hall.. This action, called the Pacific Maritime Strike, started 9 May 1934 and ended 31 July 1934. When workers responded to efforts by the employers to break the strike, two workers were killed by police and many others were injured on 5 July 1934. The National Guard was called out by the governor, and in response to these events, Bridges helped to lead a four-day General Strike of workers in almost every union in San Francisco that brought business and transportation to a stop. After both sides agreed to arbitration, the longshoremen were awarded their primary goal — a new hiring hall in place of the old daily hiring system, the shape-up. (Cherny 2005)

After the settlement, Bridges was elected president of the ILA's Pacific Coast district and then president of the International Longshoremen's and Warehousemen's Union (ILWU) when it was established in 1937 and affiliated with the Congress of Industrial Organizations (CIO). In these roles, he led several successful strikes between 1936 and 1948. In 1937, *Time* put Bridges on its cover, and called him "the most conspicuous maritime labor leader in the U.S. today . . . Incorruptible by cash, favors or flattery . . . "

According to Robert Cherny:

> In 1948, as the ILWU was preparing to strike to keep the hiring hall, the U.S. Attorney General invoked the Taft-Harley Act's "cooling off" period. Ballots were sent to 26,695 ILWU members, asking if they accepted the employers' offer. In one of the most amazing demonstrations of union solidarity in American labor history, not a single ballot was returned. A strike began on Sept. 1, 1948. Negotiators for the Waterfront

Employers refused to bargain so long as Bridges was head of the ILWU. In November, a group of employers rebelled, formed the Pacific Maritime Association, and brought in a new negotiator, who soon managed to find a solution to the strike issues. At the end of the strike, the ILWU kept control of the hiring hall and gained a wage increase. This strike brought in a “new look” for Pacific Coast longshore labor relations.

In the late 1950s, recognizing that technology could transform longshoring, Bridges argued that the ILWU should not fight change but instead try to benefit from it. After extensive discussion in the union newspaper and union meetings, and with endorsement by the membership, Bridges led negotiations through which the ILWU accepted full mechanization in return for generous retirement arrangements and a guarantee of full pay for those who did not retire, even if there was no work. The ILWU-PMA Modernization and Mechanization Agreement (M&M) of 1960 led Secretary of Labor James P. Mitchell to judge that "next only to John L. Lewis, Bridges has done the best job in American labor of coming to grips with the problems of automation." Arguments that Bridges settled too cheaply were largely from hindsight. Some ILWU members, however, criticized the M&M for undermining the hiring hall by permitting employers to choose "steady men" for certain jobs; the steady-man issue, especially, fueled a four-month strike in 1971-1972. one at the time anticipated how rapidly longshoring would change, but the M&M helped to expedite the rise of container shipping and the declining presence of longshoremen on the waterfront.

Bridges served as president of the ILWU from its founding in 1937 until his retirement in 1977. For a time, he was also Pacific Coast Director for the CIO. Mayor Joseph Alioto appointed Bridges in 1968 to the Citizens Charter Revision Committee and in 1970 to the San Francisco Port Commission. He died in 1990. (Cherny 2005)

While Bridges remained a powerful figure until his retirement in 1977, ultimately achieving recognition as a civic leader outside the labor movement, his greatest achievement was as a leader of the ILA during the General Strike.

Harry Bridges Role in the 1934 Big Strike

In 1949 Harry Bridges wrote that "the 1934 strike marked a great rebirth of American unionism":

> The 1934 strike is memorable because above all it demonstrated the power latent in the rank and file. The rank and file not only manned the picket lines and did the sacrificing — as it must in every strike — but it also made the big decisions and determined the strategy. The rank and file wouldn't be bulldozed or buffaloed, browbeaten or divided, and therefore it couldn't be licked. (Bridges in Quin 1949:237-238)

Bridges' tribute to the rank and file underscores the unique contribution that he himself made to the strike and to the labor movement as a whole. Bridges emerged from the ranks to assume his position as leader of the strike and the union, and he retained the respect and affection of rank and file longshoremen long after the strike was over. "Among these men, whether they were radical or conservative, Bridges was widely regarded as the embodiment of the best in themselves and their movement" (Nelson 1988:142).

Kimeldorf acknowledged Bridges as a genuine hero:

> Bridges was also a leader. He emerged from the 1934 strike as something of a heroic figure, one of those rare individuals who throughout history seem to come forward, risking personal security and safety, to lead a disadvantaged group of men into battle against a more powerful adversary. To the '34 men who fought alongside him, Bridges appeared larger than life. Stories of his courage and accomplishments abounded, some of them real, others imagined. "Harry had what it takes," as many old-timers put it; he was a "natural," a man seemingly destined for leadership. Every union has a founder. The point is that Bridges was much more than that. In a very real sense, he was the union; attacking him was like attacking the ILWU. At least that is how the membership saw it: when the media referred to Bridges as a Communist, they were also red-baiting the longshoremen; when the shipowners broke off negotiations with Bridges, they were really trying to "bust up" the union . . ." (Kimeldorf 1988:164)

Ship owners, on the other hand, were "paralyzed" by their hatred of Bridges. Unable to defeat him during the strike or at the bargaining table, they tried to destroy him with charges of communism (Nelson 1988:141).

Bridges was, by all accounts, a brilliant public speaker, captivating listeners not only at labor meetings but in every forum from picket lines to public hearings. His testimony before the National Longshoremen's Board impressed Paul Eliel and other businessmen with an interest in the strike. Eliel wrote that "employers were able for the first time to understand something of the hold which he had been able to establish over the strikers both in his own union and in the other maritime crafts" (Eliel in Nelson 1988:140).

On the 50th anniversary of the 1934 strike, Bridges wrote an eloquent summation of its importance, concluding that it was about power, democracy, and dignity:

> Something special happened in the spring and summer of 1934. Maritime workers who had been considered little more than ignorant roustabouts took history into their own hands. They built a powerful new movement from the ground up, waged a complex and bitter strike along the length of the Pacific seaboard, and conducted the only successful General Strike in the country's history. They proved that they could win, and win big. Their success stimulated hundreds of thousands of other workers to organize. In the long run they raised the standard of living of nearly every man, woman and child on the coast, and created working conditions which became the envy of millions of workers in the rest of the nation.
>
> The shipping employers and the whole crowd in the Chamber of Commerce and the Industrial Association also missed the boat. They thought they could hire scabs to do our work. They thought they could starve us out. And finally, when it came down to it, they thought they could use the police and the National Guard to beat us and shoot us and intimidate us into submission. After all, these tactics had worked in the past.
>
> But the real story, which they all missed, was the tremendous understanding of the members of our union and their families, the members of the AFL unions, and most of the labor leadership — those "real Americans" that the papers were always talking about . . .. Their loyalty and support laid the groundwork for victory. The same gut solidarity pulled us through after Bloody Thursday, when

> Nick Bordoise and Howard Sperry were killed. We never meant for anyone to lose his life. Many of the members of our strike committee figured we were licked. We'd given a pretty good accounting of ourselves, but we knew we couldn't go on fighting the police every day, let alone the National Guard. The logical result of Bloody Thursday — as had happened so many times before — was that the union would be broken and the men would slowly trickle back to work.
>
> And so they ask, 50 years later, what was it really all about? First of all, it was about power. We showed the world that when working people get together and stick together there's little they can't do. Second it was about democracy. We said that the rank and file had the right to decide, and that if you gave them the facts they'd make the right decision. Finally, it was about how people treat one another. It was about human dignity. We forced the employers to treat us as equals to sit down and talk to us about the work we do, how we do it and what we get paid for it. (Bridges in Hinckle 1985:5-6)

The remaining paragraphs in this Section on Bridges and other labor leaders were added by Robert Cherny.

Throughout his career as a labor leader, Bridges consistently advocated "a lot of rank and file democracy and control." Under his leadership, the ILWU institutionalized extensive member participation in union decision-making, including a requirement in the San Francisco local that officers could not serve consecutive terms. Within the ILWU, major decisions have usually been made through a membership referendum, and officers have been elected by all union members. Bridges often reminded his members, especially his critics, that a petition by 15 percent of the membership could suspend him--or any international officer--and force a recall election. In the longshore caucus, delegates from all the waterfront locals meet regularly to decide contract issues.

Bridges understood the power of symbols for minimizing the distance between leaders and members. He argued that a union officer should not earn more than the highest paid member of that union, and he stuck to that commitment throughout his career. Of 36 union presidents listed in a news magazine salary survey in 1964, none received less than Bridges. Bridges's personal lifestyle reflected the same values. When he and his wife bought a home, it was a

modest row house in a middle class neighborhood. Away from home, he often stayed in cheap hotels. Nothing earned his contempt faster than making a personal profit from the trust of union members.

Bridges consistently advocated the unity of labor. He helped to create and lead the Maritime Federation of the Pacific Coast, an ambitious effort to unite all west coast maritime unions. Initially successful, the federation conducted a three-month strike in 1936-37 that contributed to conflict between its two largest organizations, the ILA Pacific Coast District and the Sailors' Union of the Pacific (SUP). In 1937, Bridges led the Pacific Coast District into the Congress of Industrial Organizations (CIO) as the ILWU and became its first president, but the SUP opted for the AFL and left the Maritime Federation in 1938. Later, in 1946, Bridges took the lead in organizing the short-lived Committee for Maritime Unity, hoping to develop common bargaining among the six CIO maritime unions. By the late 1950s, the ILWU and Teamsters were working together to resolve jurisdictional disputes and eventually undertook some joint bargaining. As ILWU president, Bridges eventually sought a reconciliation with the ILA. One of his last public statements was to endorse affiliation with the AFL-CIO when ILWU members voted on that measure in 1988.

Bridges frequently described himself as a Marxist. His Marxism was never rigid, but he claimed that his class analysis kept him grounded in negotiations. No matter how well he got along with the men on the other side of the bargaining table, he claimed, he always knew that they represented the "class enemy." He approached race relations from a class analysis, arguing consistently for full racial integration of the workforce and the union, and he argued for class solidarity across the lines of race, ethnicity, gender, and craft. Similarly, he worked from his ideological perspective to define the role of union president, to foster rank-and-file democracy, to advocate for civil rights and civil liberties, and to take positions on foreign policy issues.

Bridges consistently supported and defended the Communist Party (CP) and the Soviet Union. For Bridges, the enemies of the CP and the Soviet Union were his enemies--including both red-baiters and Trotskyists. Though Bridges acknowledged that "all the evidence

introduced against me in that fight with the government was 95% true," he always denied that he had ever become a member of the CP.

After Bridges emerged as a strike leader in 1934, some business leaders, public officials, and American Legion officers claimed, on dubious evidence, that he was a Communist and should be deported to his native Australia. In 1939, bowing to political pressure, Secretary of Labor Frances Perkins ordered the Immigration and Naturalization Service (INS) to determine if Bridges should be deported. When the hearing officer ruled in Bridges's favor, the House of Representatives passed a bill to deport Bridges. Undoubtedly unconstitutional, the measure died in the Senate. However, partially in response to the uproar over the hearing decision, Congress moved INS from Labor to Justice and established new criteria for deportation. Attorney General Robert Jackson then ordered the FBI to investigate Bridges; by 1956, Bridges's FBI file had grown to nearly 38,000 pages. In a second INS hearing, in 1941, the hearing officer found against Bridges. Upon appeal, the Supreme Court reversed that decision (*Bridges v. Wixon*, 1945), and Bridges completed his naturalization.

With the onset of the Cold War, left-wing unions came under pressure from CIO leadership to espouse anti-Communist views. In 1948, however, Bridges and the ILWU opposed CIO leaders by criticizing the Marshall Plan and supporting the presidential candidacy of Henry Wallace. The CIO subsequently expelled the ILWU on the grounds that it was communist-led. In 1949, with Bridges and the ILWU under attack within the CIO, federal authorities brought Bridges to trial, charging him and his two witnesses with lying at his naturalization when he swore he had never belonged to the Communist Party. In 1950, they were convicted of criminal conspiracy. In *Bridges* v. *U.S.* (1953), the Supreme Court overturned the conspiracy conviction on procedural grounds. In 1955, federal attorneys initiated yet a fourth trial, but the trial judge dismissed the charges.

Throughout his hearings and trials, Bridges's defense committees attracted widespread support from labor, the left, liberals, and eventually even business leaders. Most ILWU members considered him a martyr, suffering repeated trials solely because he was a successful union leader, and many others saw him as the victim of federal harassment. At the same time,

however, the attacks on Bridges and his union drained enormous amounts of time, energy, and resources just for defense. Bridges's support for the CP--and similar support by other ILWU activists--led the CIO to expel the union, and led to the loss of the ILWU's few eastern locals. The ILWU tried to take in the Marine Cooks and Stewards Union--also expelled from the CIO--but lost that jurisdiction too. The ILWU did take in the West Coast locals of the Fishermen's Union, another expelled union, and added a few other locals from other unions that had been expelled and were being raided. Thus, despite Bridges's commitment to labor unity, for 38 years--27 of them under Bridges's leadership--the ILWU stood outside the mainstream of organized labor.

Despite his life-long, outspoken admiration for the Soviet Union, Bridges after 1960 was often praised for his contributions to the maritime industry and even lauded as a "labor statesman." He disavowed such honorifics, claiming that he had not changed his views. As early as the 1950s, Bridges had become a living legend--the militant, democratic leftist who repeatedly triumphed over federal persecution.

Other Waterfront Labor Leaders

In addition to Bridges, the San Francisco Waterfront was also the key location for the careers of several other nationally significant labor leaders, most notably Andrew Furuseth and Harry Lundeberg.

Andrew Furuseth, a Norwegian-born seaman, was long the moving force in the Sailors' Union of the Pacific and later in the International Seamen's Union (ISU). Born in 1854, Furuseth came to the U.S. in 1880 as a seaman. He helped organize the Sailor's Union of the Pacific in 1889, and became its secretary. He was a key leader in the 1901 teamster and waterfront strike of 1901. The AFL chartered the International Seamen's Union in 1892, and Furuseth became its leader in 1908, serving until 1938. During his service as head of the ISU, his most noteworthy success was the Seamen's Act of 1915; written largely by Furuseth, it specified minimum safety and living conditions for American seamen and defined their legal rights. During the 1934 strike, he came to San Francisco and took part in the seamen's burning of the "fink books" as part

of that strike. However, by the 1920s, by Furuseth was spending most of his time in Washington, D.C. During the 1901 strike, the SUP headquarters was in the Audiffred Building, which has been on the National Register since 1979; the National Register nomination for the Audiffred Building has additional information on the role of that building as a union headquarters.

Harry Lundeberg was born in Norway in 1901. After the early 1920s, he shipped out of Seattle, Washington, and joined the Sailors' Union of the Pacific (SUP). In 1934, Lundeberg became chairman of the SUP strike committee in Seattle and emerged from the strike with both a reputation for militancy and a wide following among northwestern seamen. In April 1935, Pacific Coast maritime unions formed the Maritime Federation of the Pacific (MFP). At the MFP's founding convention, Bridges championed Lundeberg for the MFP presidency. Lundeberg won, amid expectations he would be Bridges's reliable ally. Lundeberg, however, set his own course. He challenged the ineffectual SUP leadership and, in December 1935, won election as secretary-treasurer, the SUP's executive officer. Thereafter, Lundeberg made his home in San Francisco, and became a fixture on the San Francisco waterfront until his death.

Leaders of the International Seamen's Union (ISU), the SUP's parent body, fearing a challenge from Lundeberg, contrived charges to justify rescinding the SUP charter. Refusing to accommodate, Lundeberg led the SUP to an independent course, outside the American Federation of Labor (AFL). Relations between the two largest MFP affiliates, the SUP and ILA, soon soured over "quickie" job-actions (spontaneous small strikes, often involving a single ship), jurisdictional issues, and the handling of cargo from ships declared "unfair." Though the MFP ran a joint strike in late 1936 and early 1937, antagonism increased between the SUP and ILA, and between Bridges and Lundeberg. Lundeberg also became increasingly critical of Communist influence in the maritime unions. The Congress of Industrial Organizations (CIO) initially attracted Lundeberg, but by mid-1937 the CIO had chartered both the National Maritime Union (NMU), led by Joseph Curran, which overwhelmed the ISU in representational elections among Atlantic and Gulf Coast seamen, and also the International Longshoremen's and Warehousemen's Union (ILWU), formerly the Pacific Coast division of the ILA, headed by

Bridges. Lundeberg now held back from the CIO, due partly to a concern over Communist influence in both the NMU and ILWU and partly to a fear that, if the SUP joined the CIO, it would be submerged into the much larger NMU and lose its autonomy. The SUP remained independent. Then, in April 1938, ILWU members slugged their way through an SUP picket line on the San Francisco Waterfront, marking a jurisdictional dispute with the NMU. Afterward, the SUP withdrew from the MFP, and Lundeberg convinced his members to rejoin the AFL. AFL leaders had no viable alternative to the SUP for organizing seafarers, so, in October 1938, the AFL chartered a new union, the Seafarers' International Union (SIU), with the SUP as its core and Lundeberg as its president.

Lundeberg earned a reputation as a outspoken anti-communist who never backed away from a fight. In 1940, his jaw was broken when he led an SUP attack on an ILWU picket line. The SUP newspaper, *West Coast Sailor*, which Lundeberg edited, was also blunt and hardhitting, unmercifully lambasting employers and labor opponents. Major strikes in 1946 and 1952 served to retain and extend wartime gains in wages and conditions for the SIU's 80,000 peacetime members. With the merger of the AFL and CIO, Lundeberg, in 1955, became president of the AFL-CIO Maritime Trades Department. By the 1950s, Lundeberg had become a conservative Republican, bluntly informing the California Labor Federation in 1952 that he would vote for Dwight Eisenhower regardless of their endorsement of Adlai Stevenson. He disdained "tuxedo unionism" and always wore black jeans and an open-necked shirt. Seamen labeled his ever present short-billed cap the "Lundeberg stetson." He died from a heart attack in 1957. His son, Gunnar, was elected secretary-treasurer of the SUP in 1990.

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CRITERION C

ENGINEERING

Significance

The Port of San Francisco Embarcadero Historic District is eligible for the National Register of Historic Places under criterion C at the national level of significance in the area of Engineering as a rare and late example of an important type of port. The port of San Francisco is an example of a once ubiquitous type of port that developed and evolved for centuries. This type of port, which is well documented at least as far back as Greek and Roman times, was organized around a complex interaction of the size and character of ships, the ways in which specialized labor handled cargo, the requirements of merchants, and the availability of technology. The unifying condition of this type of port was the need to handle break-bulk cargo — to load and unload it from ships, to sort it on the wharf or pier, and to load and unload it on vehicles of land transportation. Characterized by a bulkhead and piers for break-bulk cargo, ports of this type flourished in the United States in the nineteenth and twentieth centuries. San Francisco, with its seawall, piers, Ferry Building, Belt Railroad, railcar slips, facilities for interaction of water and land transportation, bulkhead restaurants, and other features is a fully realized example of the type. Because of the rapid adoption of container shipping beginning around 1970 and the demolition or abandonment of most break-bulk ports, San Francisco is the only surviving example of this once ubiquitous type. The district is eligible at the National level of significance because it is the last example of an important type that once existed in New York, Boston, Philadelphia, Seattle and other ports of the period.

Among its several areas of significance, recognizing the Port of San Francisco Historic District as a type of port is the most inclusive and comprehensive. To understand its significance as a type, it is helpful to refer to the material presented as background in the sections under criterion A on Government, Commerce, Transportation, Labor, and under criterion C on Architecture. All of these areas of significance are embodied in the physical character and facilities of the port.

The permanent form of the port of San Francisco began with the beginning of construction of the seawall in 1878. Built in twenty-one sections between 1878 and 1915, the seawall established the shoreline of the city from which wharves and piers were built. Wood piers built during the nineteenth century quickly deteriorated due to marine borers. Research and experimentation resulted in better wood piers by 1900 and in long-lasting concrete and steel structures beginning in 1908. The port was largely developed between 1908 and 1938.

While the wharves and piers were under construction, the port also acquired and installed the latest cargo handling and moving equipment. The Belt Railroad, largely built between 1890 and 1913, was the only public shoreline railroad among all United States ports. About 1916 the piers were equipped with electricity to run cargo handling machinery of all sorts. Machinery and methods of moving cargo evolved rapidly in the 1920s and 1930s. Jitneys and the forklift and pallet system were two of the many developments which affected cargo handling and pier design in this period.

The design of the piers was dependent on the sizes of ships, the nature of cargo handling machinery, the needs of merchants and shippers, and the organization of labor. These various factors were constantly changing, resulting in constant modifications of existing facilities and ever changing designs for new ones.

With the rapid adoption of container technology about 1970, break-bulk cargo almost disappeared and there was very little need for the types of ports developed to handle it, including San Francisco. With the end of break-bulk cargo, San Francisco’s piers were largely abandoned. Likewise, patterns of waterfront work, which were part of a continuous tradition since antiquity and which had flourished in the United States, came to an end.

In other parts of the United States, break-bulk facilities were demolished to make way for container facilities, or they were abandoned. Abandoned facilities were demolished or burned down. San Francisco’s waterfront has survived for reasons that are not entirely clear, but probably have to do with its long-time administration by the Board of State Harbor Commissioners and with the strength of waterfront labor unions which wanted to save the piers in order to save blue-collar waterfront work in the city.

The Port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion C in the area of Engineering because it embodies "the distinctive characteristics of a type" (United States Department of the Interior *Bulletin 15* 1991:17-18). It is a rare example of an important type of port characterized by its accommodation of break-bulk cargo. It is significant for the period 1878 to 1946, from the beginning of construction of the seawall to the time after World War II when activity at the port declined precipitously and its engineering facilities were suddenly greatly underused. The district is significant in association with the following theme — the physical development of ports in the United States.

Background

Introduction

The Port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion C in the area of Engineering, as an example of a property type. To address the district as a type, it is necessary to compare it to other ports, both historical and contemporary. This background section includes an overview of the history of European and American ports. This overview considers both large scale qualities of ports — their overall plans — and specific features such as the design of piles and the use of materials. These physical characteristics are a major part of what constitutes a property type.

Although a property type is defined by its physical characteristics, it cannot be understood apart from its purpose and the ways in which it was used. At the most general level, the purpose of the port of San Francisco was to accommodate water-borne vessels and their interactions with various forms of land transportation in order to facilitate commerce in goods and the transportation of passengers. To accomplish this purpose, the facilities of the port were designed for very specific uses related largely to cargo handling technology and the ways that workers occupied the buildings and structures — for longshoremen and other workers loading and unloading ships and moving materials between warehouses and the waterfront. In other words, to address the district as a property type in the area of Engineering, it is necessary to address in more or less equal measure, issues of engineering, cargo-handling technology, and the organization of work on the waterfront. Each of these areas is addressed below as elements of the background needed to evaluate the district.

Finally, a brief history of the port of San Francisco is presented to illustrate both its characteristics as a type and the ways that it evolved during the period of significance.

Early History of Ports

The history of the port of San Francisco is part of a world-wide story that is thousands of years old. "Communication by sea dates back far beyond written history, and where ships have been used for transport, so have ports and harbors been developed for their safety and convenience" (Pannell 1964:131). Ports built by the Cretans at Pharos in Egypt by 1600 B.C., by the Greeks near Athens by 458 B.C., by Alexander the Great at Alexandria around 332 B.C., and by the Romans in many locations around the Mediterranean Sea and beyond before the fifth century A.D. were, in many cases, far more solid and elaborate than those built since the industrial revolution. "Most of the ancient harbors were built upon a scale of solidity and architectural grandeur seldom or never attempted in modern times" (Du-Plat-Taylor 1928:1). Among the most famous examples is the port of Alexandria at Pharos with its levees, piers, and giant lighthouse.

The impressiveness of these early ports notwithstanding, the physical character of the Embarcadero Historic District has more in common with 2,000-year-old ports — and with ports built between antiquity and the twentieth century — than it does with ports developed in the last thirty years. The fundamental requirement of both ancient ports and the port of San Francisco in the late nineteenth and early twentieth centuries was a place for a sea-going vessel to tie up in order to load and unload passengers and cargo. This was accomplished by the labor of numerous workers and with the assistance of cargo handling machinery.

Until about 1960, ships always tied up at the same kinds of places — manmade platforms built alongside or projecting into navigable water. Known at different times and in different countries by various names, in the United States, they are called wharves when they are parallel to the shoreline and piers when they project out from the shoreline into the water. Many ancient piers were curved but some were straight. At the ancient port of Eleusis near Athens records exist of a "mole or jetty [pier], straight in plan, . . . probably intended for the discharge and loading of vessels laid alongside it" (Du-Plat-Taylor 1928:11).

Piers and other port structures in antiquity were built according to methods still used in San Francisco in the twentieth century. Like the San Francisco seawall, the Greeks built harbor walls and piers in a simple but effective manner: "of rubble thrown down in the water and assuming its natural slope until the mound reached water level, where it was leveled off and the masonry blocks were built up above" (Du-Plat-Taylor 1928:12). Like many structures on the San Francisco waterfront, the Romans built structures on wood piles both along the shore and driven into navigable water away from shore. The Romans probably built "wooden quays and jetties" — i.e., wharves and piers — in Britain (Pannell 1964: 134, 136). These were similar to wood wharves and piers in nineteenth century ports in the United States. "Until the mid nineteenth century, many maritime building methods had not changed significantly since antiquity. Techniques first described by the Roman architect and engineer Marcus Vitruvius in the first century B.C.E. were still employed for constructing seawalls" (Bone 1997:87).

For many centuries, the universal means of loading and unloading ships involved large numbers of workers and heavy physical labor. In ancient times, workers were usually slaves. In the late-nineteenth and early-twentieth centuries, workers were gangs of longshoremen. In order that workers could handle the cargo, it was generally broken down into units that one person could maneuver. In ancient times, amphora (distinctive ceramic jugs with handles and pointed bottoms) were common containers for liquid cargoes such as olive oil and wine — many such containers have been found by marine archeologists. In the nineteenth and twentieth centuries sacks, barrels, crates, and bales were common types of packages. In contrast with bulk cargo — say grain or coal dumped into large bins, or oil in tanks — cargo carried in these small packages is called break-bulk cargo.

Even in ancient times, waterfront work had the benefit of machinery. Until the beginning of the industrial revolution in the seventeenth century, waterfront technology was simple and did not change much, consisting of pulleys, simple cranes, screw-pumps, and slings. These were essential for the construction of port structures, for the loading and unloading of ships, and for building and repairing ships.

At every time in the history of ports, there was a direct and inseparable connection between the design of port facilities, the availability of cargo handling technology, the sizes of ships, and the

character and practices of labor. At all times, a pier had to be at least as long as the ships which it served and wide enough to accommodate both the cargo which was loaded on or off a ship and the means of moving cargo on or off a pier. One known example of a Roman merchant ship was 120 feet long. Because most Greek and Roman waterfront work was done by slaves, labor was cheap, and there was little incentive to use or improve cargo handling technology. On the other hand, piers had to be large enough to accommodate large numbers of workers loading and unloading cargo and carrying it on and off. Pier sheds to cover the cargo were not built or were not common in ancient times, but the Romans built shelters between piers, called cellae (Du-Plat-Taylor 1928:15), to protect ships at berth.

After the fall of the Roman Empire in the fifth century A.D., regular shipping in Europe disappeared except by the Scandinavians, and there was virtually no development of ports for centuries. “By the twelfth and thirteenth centuries, trade in Europe was again flourishing; quays and jetties were coming into use for convenience in loading and unloading ships” around the Mediterranean, in Britain, and around the Baltic. (Pannell 1964:136). Venice was the center of trade that stretched to China. “Shipping regulations of this period show that an elaborate system of inspections, loading rules, and construction regulations were effectively enforced” (Bryan 1939:8). Medieval port technology was probably similar to that of the Roman Empire.

Beginning in the fifteenth century, changes began to take place which affected the development of ports over the next five hundred years. “The Renaissance and its almost inevitable consequence, the Industrial Revolution, brought about a great development of ports, and this became extremely rapid in the eighteenth century” (Pannell 1964:140-141). The most important changes at the beginning of this development were the increasing sizes of ships and the longer distances that they traveled — across oceans and out of sight of land for long periods.

In the seventeenth and eighteenth centuries, the use of larger ships led to a need for deeper harbors in northern Europe where tides were much higher than in the Mediterranean and gave rise to the development of new types of port facilities. These facilities provided berths of sufficiently deep water by means of locks, gates, dredged basins, pumps, as well as wharves, piers, levees, and shoreline walls. Complexes of these facilities called docks, captured deep water at high tide for the loading, unloading, or repair of ships. Docks were extremely expensive

and required innovative structural and mechanical technologies. Le Havre, London, Liverpool, Hamburg, and Antwerp were among the ports developed early and extensively with docks.

In the same period, long-distance travel resulted in the establishment of new ports around the world — in cities such as Rio de Janeiro, Cape Town, Bombay, and New York (Pannell 1964:138). When San Francisco emerged rapidly as a port in the mid-nineteenth century, it was part of this same development. "At this time, two main factors determined the commercial success of a port: one, the physical shape of the harbor and its suitability for shipping and the other, the capacity of its immediate hinterland for the production and absorption of goods carried by sea. It is mainly by changes in these factors that ports have risen or fallen in importance" (Pannell 1964:139).

In the nineteenth century, as United States ports were growing, the principle factors in the development of ports included the continuing increase in the size of ships in order to service commerce more efficiently; "the application of steam-power to cranes, pile-drivers, dredgers, and other plant; . . . improvements in materials, including concrete;" . . . and a growing reliance on scientific and technological research to solve a variety of port problems" (Singer 1958:539).

United States Ports

In the years following the American Revolution, ports in the new United States all expanded. The principal ports of Boston, New York, Philadelphia, Baltimore, and Charleston built new wharves and piers for expanded trade and growing populations. In each of these cities, the waterfront was built up with rows of wood piers, designed to accommodate a vessel on each side, projecting from the shoreline. Warehouses were built along the shore facing the waterfront. The shoreline itself was provided with a manmade edge — a wall, wharf, or a combination of these — so that the water was deep enough for ships to come right to the waterfront. Many of these developments were built independently by private builders, creating irregular and uncoordinated waterfronts.

The basic features of ports in the United States were established very early. In the 1630s, the Dutch built "small platforms and seawalls" at the tip of Manhattan, and in the 1650s, they built an expanded seawall using pile driving hammers. Behind each seawall they dumped fill,

creating new land along the waterfront. By the 1670s, they had floating derricks for dredging offshore, which served both to maintain navigable water and to provide fill for the area behind the seawall. The seawall itself created a waterfront that was useable for shipping. From the seawall "the first pier of substance," measuring twenty by one hundred feet, was completed in 1659. In 1727, a municipal ordinance established a limit for the construction of piers of 200 feet from shore (Bone 1997:92-96). "By 1800, most of the southern tip of Manhattan had been ringed with bulkhead [seawall] and landfill" and "by the early nineteenth century" Brooklyn's waterfront had been similarly developed (Bone 1997:27).

Among United States ports, the port of New York provides a particularly useful point of comparison for San Francisco. In the 1850s, during the first decade of development of the port of San Francisco, New York passed Boston as the busiest port in the United States. Of those who came to California by sea during the nineteenth century, the majority came from New York (and most of the rest came from the similar ports of Boston and Philadelphia). Those who came from New York had a direct experience of the development of its port. In 1853, there were 112 piers in lower Manhattan, some of them 600 feet long. In 1855, the state established harbor lines for bulkheads and piers. (Bone 1997:43).

By 1870, uncoordinated growth of the port of New York resulted in deplorable conditions. The *New York Times* described "mean, rotten and dilapidated wooden wharves" and "rotten structures, the abode of rats and the hiding place of thieves" (quoted in Bone 1997:39-40, 43).

As the port of San Francisco had been placed under the control of the Board of State Harbor Commissioners in 1863, the port of New York was placed under the Department of Docks in 1870. In both cases the ports were placed under strong, centralized public administration in response to a variety of problems including uncoordinated development, the need for a stable shoreline and navigable water, and the need to rebuild piers to accommodate increasingly large vessels. At a time when the Board of State Harbor Commissioners was floundering, in 1871, the Department of Docks completed "a master plan for the waterfront" under the direction of George B. McClellan, the civil war general and future candidate for president. The "main component" of the plan was "the construction of a monumental and continuous masonry bulkhead" — "a masonry riverwall to encircle the island with wood piers at given intervals" and a wide street

along the waterfront. The plan did not include a rail line along the waterfront, which had been proposed. In adopting a system of bulkhead and piers, McClellan had specifically rejected the far more expensive system of docks used in London, Liverpool, and elsewhere in northern Europe. The plan that was adopted provided "every facility for the cheap and rapid handling of vessels and their cargoes." At the same time, the bulkhead and pier plan represented a continuation of a tradition in all major United States ports since the seventeenth century. (Bone 1997:35, 44-46, 56, 65-66)

The alignment of New York's planned bulkhead — the riverwall — was a continuous curve. This was in contrast to the first San Francisco seawall, begun in 1867, which was laid out in a zig-zag alignment — a poor design that caused silting. When T. J. Arnold proposed a new seawall for San Francisco in 1873, it was similar to McClellan's New York riverwall in its gently curving alignment. While conditions for these two walls were similar — intermittently shallow bedrock and deep mud — their basic designs were different (with variations according to location). San Francisco's seawall was a simple rubble stone wall with piles driven through it to support a bulkhead wharf. New York's riverwall was a modern version of the best-built walls of antiquity, with a rubble stone base supporting a masonry wall of precast concrete blocks. Unlike San Francisco's sea wall, the masonry blocks of New York's riverwall created a vertical face and obviated the need for a bulkhead wharf (Bone 1997:108).

The two walls were built about the same time. Construction was begun on New York's riverwall in 1874. It was built in segments with numerous design modifications and was completed in 1916. San Francisco's seawall was also built in sections with modifications, from 1878 to 1915. The construction of both walls depended on steam pile drivers and on steam powered dredges.

As the bulkhead walls were completed, both ports built, rebuilt, and maintained piers. Except for two piers in New York (one of which, Pier A, survives) most nineteenth century piers in both cities were wood. Engineers in both cities struggled with solutions to the accelerated deterioration of wood piles from marine borers. The most effective solution was the use of creosote and other chemicals on the wood piles which substantially extended their lives. In the 1890s, new efforts were made in New York to build in permanent materials, followed by similar efforts in San Francisco. The first large development of modern piers in permanent materials

were the Chelsea Piers in New York, built between 1902 and 1910 (Bone 1997:71). In 1901 and 1907, San Francisco first attempted to build concrete piers, although these deteriorated rapidly due to problems with the quality of cement used. Beginning in 1908, San Francisco built a series of permanent, reinforced-concrete piers. Because of the experience of the earthquake and fire of 1906, San Francisco and Los Angeles were the first cities in the United States to see the widespread use of reinforced concrete (Corbett 1980). The use of reinforced concrete at the Port of San Francisco was, therefore, related not only to the context of port construction in the United States, but also to its San Francisco context where engineers, architects, manufacturers, and contractors were familiar with this newly appreciated material.

With the bulkheads in place in both cities and methods of permanent pier construction available and in use, port engineers in New York and San Francisco became increasingly concerned with adapting to changes in technology. Before any other port in the country, San Francisco had begun building a public waterfront railroad in 1890. Photographs of both ports taken around 1910 to 1915 show large machines used for loading coal and doing other heavy work on the waterfront. One of the principal adaptations made in both ports was the accommodation of ever-larger ships. In 1910, a proposal was made for “larger ‘terminals’ for railroad and marine use” in New York. Nothing like this was built in New York however until the 1920s when large new piers and terminal complexes were built outside of Manhattan in Brooklyn, Queens, and Staten Island (Bone 1997:77). In San Francisco, large new mechanized developments were built on the previously undeveloped shoreline south of China Basin, away from downtown congestion. In addition, San Francisco built piers 45 and 48, piers that were twice as wide as those of the previous generation — wide enough for two rows of transit sheds.

Speaking of the period ending in 1931 when the Department of Docks was closed and its duties were spread out among other city departments, the author of a recent historical study of the port of New York stated that “the New York City Department of Docks actively supervised the greatest public works projects of the period, employing over a thousand workers, and enlisted the most advanced engineering technologies to create the vast built fabric of Manhattan’s riverwalls and piers” (Mary Beth Betts in Bone 1997:40). Although San Francisco and its port are

proportionally much smaller than New York, a similar statement might be made about the port of San Francisco.

With the great increase both in the use of trucks for transport and in the use of motor vehicles generally, both ports made accommodations to the new situation. In the 1930s, New York built the Miller Highway, an elevated freeway over the wide shoreline street along the Hudson River from Canal Street to 79th Street "to ease congestion." With the Miller Highway, waterfront traffic was separated from that of non-waterfront traffic. The Embarcadero Freeway in San Francisco built in the 1950s, performed the same function until it was closed in 1989. The Miller Highway was closed in 1973. (Bone 1997:210)

Both ports flourished in World War II and declined after the war. The port of New York recovered by moving to Brooklyn and New Jersey, under the unified administration of the Port Authority of New York and New Jersey and building larger facilities with up-to-date cargo handling and transportation accommodations. The business of the port of San Francisco largely moved to the entirely separate port of Oakland. The same process occurred at major ports throughout the United States of moving from old congested areas to peripheral areas with more space. While the process was underway for some time, it accelerated rapidly in the late 1960s and early 1970s when container technology was suddenly adopted everywhere. While containers were the result of a long development of mechanization of cargo handling technology, container technology itself completely altered the physical requirements of ports, the amount of labor required, and the ways labor was utilized. Consisting of large, stackable steel boxes of uniform dimensions, containers were packed at the place of origin and unpacked at the destination. The role of the port was to move the large containers and transfer them using large specialized cranes between new, larger ships and specially designed trucks or railcars. Break-bulk cargo all but disappeared from the major ports and along with it the need for traditional longshoremen and large numbers of other waterfront workers. In place of many workers needed to pack and unpack the small units of break-bulk cargo from a ship, now a few crane operators and assistants could do the job.

Container cranes did not fit on the narrow piers built for break-bulk cargo. Container ships were too large for the old piers. Stacks of containers from container ships took up far too much space

to fit on the old piers. Transit sheds on piers were not needed because the containers themselves were weatherproof. The old port facilities were demolished to make way for completely new facilities or, if there was no room on the old sites, they were abandoned and new facilities were built elsewhere. Underused and abandoned piers were vulnerable in two ways if they weren't actually demolished by their owners — as many were for marinas or other recreational purposes, or simply because they were hazards. In addition, because piers and transit sheds were built as cheaply as possible in a commercial context, many were impermanent structures to begin with — especially wood structures exposed to marine borers, salt water, and wind. In New York, this has been given as "the reason why so few examples of prime port architecture exist today" (Bone 1997:136). Another related vulnerability is fire. Even pier sheds provided with automatic fire sprinklers are at risk. The common settlement of waterfront structures ruptures sprinkler-system pipes. An observation about New York applies to San Francisco and other ports as well: "These weaknesses became more critical as the piers fell into disuse. More than any other factor, failure to eradicate the danger of fire led to the disappearance of at least one-half of all the buildings on the New York waterfront. Insurance-fraud arson added significantly to these losses" (Bone 1997:123).

Among major United States ports of the period 1850-1960 — New York, Boston, Philadelphia, Baltimore, Charleston, New Orleans, Los Angeles, San Francisco, and Seattle — only San Francisco appears to retain a substantial portion of its waterfront of that era. All of these except Los Angeles developed ports adjacent to downtown business areas. All but New Orleans were developed on some variation of the bulkhead and pier plan. All of the traditional ports except Los Angeles and New Orleans have moved to new sites — and they have grown and been rebuilt.

Among all of these ports, New York was most like San Francisco. San Francisco consistently compared itself to New York and aspired to become the New York of the Pacific. Conditions and facilities in the two places were similar. The plan and appearance of the two ports was similar — long, gently curving waterfronts on continuous bulkheads with rows of parallel piers near downtown business districts. By the 1980s, there was virtually nothing visible left of the port (of New York) and its hundreds of piers — the greatest public works project in New York of

its era. The riverwall is largely intact, although much of it has been buried in fill, such as at Battery Park City. Pier A, built in 1884 of stone and steel and the Municipal Ferry Piers of 1906-1909 remain at the tip of Manhattan. The South Street Seaport is a neighborhood of historic structures that faced the waterfront — all of which has long since been changed.

Among all of these ports, San Francisco's is the only one that retains a substantial fabric and feeling of its era. Despite the loss of many of its piers and changes in its setting, San Francisco alone retains, in addition to its seawall and bulkhead wharf, rows of piers and a diversity of other fabric — car ferry slips, restaurants for workers, pile driving rigs, the Ferry Building — that convey the scale and significance of the ports of the early twentieth century.

While it is not entirely clear why the port of San Francisco remains so much intact while others have disappeared, there are obvious possibilities. First, because the port of San Francisco was controlled by a single public agency throughout its history — by the Board of State Harbor Commissioners and its successor, the San Francisco Port Commission — decision-making has been centralized. Second, because the port hoped to recover its maritime prominence and because hopes for recovery of the port were strongly linked to hopes of salvaging blue-collar waterfront jobs, decisions about port facilities were not made on a strictly business basis. Harry Bridges and other labor leaders have served on the Port Commission and, ironically considering the radical role of labor at the port, have provided a strong conservative position with respect to port facilities. It may be that the labor heritage of the port of San Francisco has been a significant factor in its preservation.

Port of San Francisco: Engineering and Cargo Handling 1878-1920

The port of San Francisco was developed in phases along with sections of the seawall beginning in 1878. After 1878, the Board of State Harbor Commissioners built, maintained, and rebuilt many wooden piers up and down the waterfront. Assaulted by marine borers, many piers were severely deteriorated in five to ten years. According to an active president of the Board of State Harbor Commissioners, "By reason of the great destructiveness of marine pests, this port has been one of the most expensive to keep in repair of any of the harbors of the world" (Kilburn 1900:1). Quickly deteriorating piers were expensive and not worthy of adornment or other non-essential investment. Largely for this reason, few piers were built with transit sheds at first —

which would only have to be replaced when their substructures collapsed. Altogether, according to an early harbor commissioner, "The designing of harbors constitutes confessedly one of the most difficult branches of civil engineering" (Stevenson 1880:406).

On the open decks of the earliest wood piers, teamsters hauled cargo on and off with horse-drawn wagons. Cargo was loaded on and off ships which were tied up on both sides of long narrow piers by gangs of longshoremen. The principal requirements of such piers was that they be long enough for the ships that they served, wide enough to accommodate the business of ships, and that there were mooring posts to tie up the ships. The hard physical work of the longshoremen was made easier by the use of derricks, animal power, and steam donkeys — portable machines that could lift heavy loads.

The concern of merchants led to increased construction of transit sheds to shelter cargo from the weather. The presence of transit sheds on piers brought new problems in cargo handling, however. The movement of goods in and out of doors, to and from a confined space, led to congestion. It was important to locate a ship in relation to the doors of a transit shed to minimize congestion. The construction of transit sheds may also have been associated with the first sections of the Belt Railroad north of Market Street, beginning in 1890. Although not yet built onto the piers, the presence of the railroad both relieved some of the physical work on the waterfront and sped up the pace of work.

It may be that the construction of more transit sheds at the end of the nineteenth century — by 1900, perhaps half of the piers had them — was also related to growing confidence in structural solutions to the problems of marine borers. In 1895, Pier 7 was built with steel-cylinder piles. From that time to 1908, a variety of methods were attempted to arrive at longer-lasting structures, including wood piles treated with various chemicals such as creosote. At least seven piers were built with unreinforced concrete piles (Piers 19, 21, 23, and 25, built in 1901, and Pier 27 built in 1907) These failed within ten years [BSHC 1914:48-49] due to poor quality concrete, and composite piles of wood encased in concrete (BSHC 1902-1904:94; BSHC 1906-1908:12; BSHC 1914:48). While the solution to this problem had an indirect relationship to cargo handling, it was part of a general modernization that involved physical structures and cargo handling as inextricable issues.

In 1910, the Board of State Harbor Commissioners looked back to "a few years ago" as a time when "a great deal of carrying was done in sailing vessels of comparatively small tonnage. These vessels did not have any set schedules for sailing and discharged or received their cargoes in a leisurely way. This sort of procedure did not require piers which would accommodate a huge amount of freight, as it could be hauled away almost as fast as it was discharged" (BSHC 1910:36).

As in other aspects of San Francisco's history, the earthquake of 1906 was a watershed event at the port, with important implications for both engineering and cargo handling. According to a report of the U.S. Geological Survey, "Most of the structures built on piles along the bay suffered considerable damage, especially the frame sheds on the wharves" (U.S. Department of the Interior 1907:28). A former Chief Engineer at the port, Marsden Manson, commented: "The facilities upon our waterfront were utterly inadequate before the catastrophe. They are more so now" (Manson 1906:6). Even a few years into the modernization effort, the president of the Board of State Harbor Commissioners said that the problem "is to begin the construction of a harbor, almost at the beginning" (Commonwealth Club 1912:36).

Reconstruction of the piers in permanent materials beginning in 1908, construction of the Belt Railroad across Market Street in 1913, and completion of the seawall by 1915 produced vastly improved port facilities that were associated with significant changes in cargo handling as well. The heightened business-oriented climate was summarized by the Board of State Harbor Commissioners in 1908: "The rapidity with which a vessel loads and discharges her cargo is one of the factors which determine the profit of the voyage for the shipowner . . . especially . . . per diem . . .. Its advantage to the dock owner is also considerable, as a greater number of vessels can be accommodated within in a given time . . . Efficiency of the labor employed in stevedoring and the convenient arrangement of the dock determine the rapidity with which cargo may be handled" (BSHC 1906-1908:16). A few years later, the relationship with business interests was given explicit expression: "Whenever possible, shipping men were consulted on the most advantageous arrangement of piers" (BSHC 1914:33).

By 1910, the modernization of the port was already having an impact: "the carriers are principally large steam vessels, carrying from 6 to 12 thousand tons of cargo. They run on a

fixed schedule and are so expensive that they must lie at the wharf the least possible length of time. Consequently every possible means of hastening the discharge and taking on of cargo is employed. The result is that an enormous amount of freight is piled upon the piers, and they become congested" (BSHC 1910:36).

At the same time, the Assistant State Engineer, Ralph Barker, recommended wider piers (from an average of 100 feet to about 200 feet) with a central rail spur between pairs of sheds and with ten-foot aprons. "This will afford floor space sufficient to accommodate a large vessel on each side of the dock. The tracks will be in a position that will not interfere with the loading and discharging and will afford good facilities for the handling of general cargoes, which must be sorted before going into cars." (Nothing of this scale was built until Pier 45 and Pier 48 in the late 1920s.) Barker also recommended building other piers with rail spurs on the aprons, "so that vessels can place their cargo directly into cars or vice versa when the character of the cargo is such that this is feasible" (BSHC 1910:36, 38). This would be done by 1914 (BSHC 1914:18-19). He recommended increasing the spaces between the piers to about 220 feet: "The space between piers also must be widened to accommodate the modern type of vessel. Vessels of this type must be handled with rapidity, consequently, while the cargo is being discharged and loaded, fuel must be taken on. This is done by having alongside the vessel coal or oil barges" (BSHC 1910:38).

The modernization of the port was accompanied by constant reconsideration of plans and policies and by constant modifications of standards — despite the superficial similarity of piers on the waterfront, they are different in many respects. In 1914, after having previously announced a plan to build all future piers in concrete, "the question of the proper class of construction to be employed was thoroughly discussed" and the conclusion was that "the use of creosoted piling in certain cases would be preferable to the exclusive use of concrete." This was because of soil conditions along the waterfront south of Market Street and because "constant changes in vessels and freight handling methods" meant that piers may have to be rebuilt much sooner than the lifespan of concrete anyway. In other words, the structural character of the piers was directly related to cargo handling methods. (BSHC 1914:32-33)

Standards for transit sheds were proposed in 1914 by consulting engineers associated with the Chamber of Commerce:

> The style and kind of sheds that have been constructed on the different piers along the water front have ranged from the cheapest board and batten structures, with wooden frames, to the reinforced concrete type of building, and there seems to be a diversified opinion among shipping men as to the proper style of shed to construct. Taking into consideration the many changes that are going on constantly in the manner and methods of handling cargoes from ship to wharf and from wharf to ship, we believe a type of moderate cost should be adopted, and would recommend that buildings supported by either steel or wooden trusses, preferably the latter, be erected, so designed as to make the members as large as possible; the roof to be constructed either of tar and gravel, corrugated iron or other similar roofing material; that the sides from the eaves to the head of the doors and the ends to be constructed of corrugated iron; that rolling metal doors be provided along the entire length of either side. It is also recommended that in case wooden trusses are used that they be planked on either side with redwood timber to act as fire breaks. Of course, it is expected that buildings of this kind would be given the proper attention, be painted sufficiently and minor running repairs kept up. Such buildings would not in any sense be fire proof, but each pier should be protected with proper fire fighting apparatus, such as hose, fire extinguishers, etc.
>
> With very small repairs sheds of this character would last a long time, and should it be found desirable at any time to make alterations due to changed conditions, they could be easily made. (BSHC 1914:63)

The standards proposed for these buildings places the highest priority on their adaptability to ever changing sizes and types of ships and the means of handling cargo. The provision of rolling metal doors along the entire sides would render irrelevant the relationship of a ship's cargo and the transit shed doors.

More specifically, at the same time the Board of State Harbor Commissioners provided a standard for rail car doors (20 feet across and 22 feet high) and for the placement of rail spurs on the piers. "All new piers are provided with at least one track and where width permits with two,

one surface and one depressed, the latter being generally placed on the northerly side." By this time, center tracks were found to contribute to congestion. (BSHC 1914:19, 33)

In addition to the railroad, adaptations of the piers for cargo handling machinery were undergoing discussion:

> In conjunction with a committee, representative of the steamship, draying, importing, and stevedoring companies, the board has been studying the subject of increasing the efficiency of the port by the installation of cargo-handling machinery. . . . It is the intention in the near future, and as soon as war conditions will permit, to install on selected piers for trial, cargo stacking machines and conveyors. Experimental installations of cargo masts and cranes for loading and discharging steamships will also be tried out, and as these different devices are found to be beneficial their use will be increased. The construction of the connecting bulkhead wharves will undoubtedly necessitate the increased use of electric trucks and trailers for the transportation of cargo on the piers.
>
> In order to increase the efficiency of the Belt Railroad it is the intention to purchase at least one more modern switching locomotive. (BSHC 1919:20-21)

These discussions were both internal and external to the Board of State Harbor Commissioners: "In May 1918, the board called into conference some fifty or more representatives of the ship owners and merchants," to discuss various matters, including "the proper equipment of the docks with labor-saving devices" (BSHC 1919:25).

In 1919, the division of labor on the piers was standardized by a decision of the United States Railroad Administration "in the matter of the uniformity of absorption of port charges." The Railroad Administration required that the shipping companies "deliver cargo to the pile on the wharf and so receive it; [and] the steamship companies to pay the cost of handling from the hold of the ship to the pile on the wharf and from the pile on the dock to the hold of the ship" (BSHC 1921:18-19). In other words, seamen who worked on the ships were responsible for moving cargo between the ships and the pier aprons, and longshoremen were responsible for moving cargo between the pier aprons and the transit sheds, rail cars, or trucks.

In the biennium of 1918-1920, to provide for the growing use of new machinery as use of the steam donkey declined, eleven piers were wired "for light and power, in order to permit the installation and use of electric cargo handling machinery." The port "purchased and placed in operation, in addition to the equipment owned by the steamship companies of the port, two electric elevators, two stackers, an electric tractor, twelve trailers and two portable motor generator sets for charging batteries." These machines were rented to the steamship companies. "Power and light receptacles" were installed inside and outside the sheds for hookups to machinery and to the ships. (BSHC 1921:27, 48)

Work on the waterfront around 1920 was described by Roy MacElwee, a prolific authority on waterfront facilities, and Thomas R. Taylor:

> The Stevedore - The stevedore is the man who is directly responsible for the loading and stowing of a ship or for discharging its cargo. The stevedore's gang for each hatch unloading usually consists of 23 *longshoremen*, 6 "in the hold," 5 *sailormen* on deck and 12 men on the pier. These three groups or gangs are under one *stevedore foreman*, or sometimes there is one foreman for the forward hatches and another foreman for the after hatches. Longshoreman work is primarily manual labor, although much skill is developed, particularly by those who handle the deck winches that run the fall ropes. The stevedore is the executive. It is much the same relation as that existing between masons and carpenters and the contractor. Stowing in the hold requires experience and skill.
>
> The Chief or Boss Stevedore — The chief or boss stevedore of a pier is an important person. He usually rises from the ranks of the longshoremen. He learns by experience how a ship can be loaded and in time acquires knowledge of the various ships of the line and their peculiarities. Ships have their own individuality and do not carry their loads alike. He is assisted by the ship's officers, who also acquire an intimate knowledge of how a cargo can best be stowed on their own particular vessel. The ship must be loaded to capacity so as to avoid waste of carrying space, and yet it must not be loaded below the safe-load line or in such manner as to strain hull or expose cargo to damage. Furthermore, certain kinds of cargo are prohibited by law and certain other kinds

> may be carried only in a manner specified by law. A thoroughly competent chief stevedore is of such importance that he is seldom promoted to be pier superintendent, it being more advantageous to keep him on the job and increase his pay. A longshoreman or a boss stevedore may save some capital and become a contracting stevedore, but this has lately become more difficult, as an increased number of steamship lines do their stevedoring under their own salaried chief stevedore instead of letting it out on contracts.
>
> Longshoremen —are usually union men. They work by the hour. Formerly a gang could load 250 tons a day, but now the efficiency of the longshoremen has decreased until a gang will load less than half this amount. Wages have about doubled, making a 400 per cent increase in the cost per ton of loading and discharging vessels. As in other industries, the only remedy is to increase the output of the worker by mechanical inventions. "Labor-saving machinery" is simply an expression for mechanical devices that will enable one longshoreman to handle many more tons of freight in eight hours.
>
> The Timekeeper —pier has a timekeeper and an assistant timekeeper. Sometimes a tallyman is assigned as a third member of this force. On some piers the timekeeper force is a large one; on others two or three on each pier are considered sufficient. The qualification for this position is primarily a memory for faces and names. The timekeeper checks the time that the men enter and leave the pier. Some lines use a time clock, but on some large piers full reliance is placed on the timekeeper's quick eye and memory. It requires a clear head to be a timekeeper, as he has to charge labor time against forty-eight different items (in the cost accounting of the company here cited). The timekeeper also makes reports on accidents. The performance of the duties of this position involves considerable exposure at drafty pier entrances, summer and winter, but as it is almost entirely an open-air job it offers this advantage to those who do not like to work inside. The timekeeper makes up the pay envelopes for the men and is responsible for the pay of the pier force. A tallyman is often assigned to full-time duty as assistant timekeeper and is in line for promotion to timekeeper. (MacElwee and Taylor 1921:51-53)

Port of San Francisco: Engineering and Cargo Handling 1920s-1950s

By the early 1920s, the modernization of the port was well underway under the direction of the Board of State Harbor Commissioners with input from shipping companies and merchants. The

sizes of ships continued to increase and with them, larger piers were built. By 1928, the two largest piers on the waterfront, Pier 45 and Pier 48, were under construction. At that time the northern half of the waterfront, above Market Street, was "developed to its full capacity, with an unbroken line of piers and slips." (BSHC [1928]:12).

Whereas the presence of machinery was secondary to that of labor on the nineteenth-century waterfront, by the 1920s, machinery had an integral role in waterfront work and was a growing factor in the design and use of port facilities. While large moving cranes were built inside transit sheds, on pier aprons, and mounted on transit shed roofs in other ports, in San Francisco only the interior of Pier 26 was equipped with a crane at the time it was built (in 1912). Cargo handling machinery in San Francisco was at a smaller scale than in some other ports.

In the 1920s and 1930s, cargo handling equipment could be divided into shipboard equipment, pier equipment, and the slings in which cargo was moved between the two. Insofar as equipment was on the ships, it had minimal impact on the design of piers.

Shipboard Hoists: Winches

At the port of San Francisco, and most other U.S. ports in the first half of the twentieth century, the main hoisting equipment used in moving cargo between the ship and the pier was the winch located on board ship. There was some dock equipment available for unusually heavy loads — derrick barges or floating cranes — but these were used only as occasional supplements, rather than replacements, of the ship's gear. (Stern 1932:10; Liebes 1942:15)

A winch was a hoisting or pulling machine with two booms that could move up or down, as well as horizontally over the ship's side. Each boom had a hoisting rope that was attached to the load and wound on a horizontal drum operated by a winch, driven by electricity or steam. After about 1929, there was a gradual change from single winches requiring two winch drivers to the double winch system so that one man operated both. (Stern 1932:11;Wellman 1995:149-150)

The speed and load capacity of both single and double winches increased in the early 1930s, and many longshoremen cited the more powerful winches as a factor in the speed-up of work during their testimony before the National Longshoremen's Board in 1934. William Lewis, District

President of the International Longshoremen's Association at the time of his testimony before the Board, placed particular emphasis on winch speed. He had been a longshoreman in San Francisco for 20 years, having started work in 1911. Lewis observed a gradual increase in the pace of the work over a ten-year period from the mid-1920s to the mid-1930s:

> The work has speeded up very much in certain things. It has been speeded up not only through the greater size of the loads, but the speed of the winches. The hoisting men speed it up. On each and every commodity it has been speeded up, there is no question about that. The winch has been speeded up from 40 to 60 hoists per hour. That would be half again as much, and the loads have increased from 18 cases to 40 cases. There have no additional men been put into that particular part of the work. (Lewis NLB 1934:Vol. 2:62-63)

Slings

Most commodities were placed in a sling to be moved between the dock and the ship. Before 1920, almost all cargo was hoisted with a rope sling, "the oldest piece of hoisting equipment, taking some burden off the back," according to Louis Goldblatt, Secretary-Treasurer of the ILWU. A rope was wrapped around the package, attached to the ship's hook, and moved by winches. (Hagel and Goldblatt 1963:14; Liebes 1942:25)

Sling boards were introduced in 1907-1908 but did not become common until after World War I. The sling board was first used in San Pedro during the loading of sacks of cement and plaster on a ship bound for San Francisco after the 1906 earthquake. Rope slings had ripped open the sacks, while sling boards did not. (Liebes 1942:26-27)

If the initial advantage of the sling board was protection of the cargo, it soon became apparent that it could handle much larger loads than rope slings. During the 1920s and 1930s, sling boards got bigger and bigger and carried heavier and heavier loads. The first sling board was a long, narrow single board, 18 inches by 7 feet, with ropes attached to each end, that could hold 18 cases of canned goods. By 1924, the double board was introduced — a platform sling three to four feet wide and six to eight feet long, that could hold 40 or more cases of canned goods. By 1934, there were platform boards or tiered racks, seven or eight feet long and five feet wide, that could carry 60 to 70 cases. (Bridges, NLB 1934:Vol. 3:178; Liebes 1942:27-28)

Not all companies preferred board slings with maximum loads. One stevedoring company executive testified that he continued to use double boards and 40 case loads until 1934, finding it just as productive as the larger 60 case loads, without exhausting the longshoremen.

> We are contracting stevedores, and we believe it is good business, we think that ordinarily with the type of winches you have in the modern ship you can handle just about as much cargo with a smaller sling as you can with the larger one. The feeling is better with the men, they have what they call a spell between loads. If I thought it were good business I would use a sling as big as a house. (Ludlow, NLB 1934:Vol. 8:573)

By 1934, a variety of slings were used, depending on the cargo: rope slings, net slings, barrel slings, box slings and different kinds of board or platform slings.

Pier Equipment

After winches and slings were used to transfer the ship's cargo from the ship to the apron of the pier, specialized pier equipment was used to move the cargo from the apron into the shed. Other devices were used for piling the cargo. There were three main pieces of equipment on the pier in the early 1930s : the two-wheeled hand truck, the four-wheeled flat truck, and the jitney. (Liebes 1942:13; Stern 1932:12-13)

Because of the use of these vehicles, which replaced horses on the waterfront, the pier decks — inside the transit sheds and on the aprons — were paved with smooth asphalt surfaces. Because cargo could easily be hauled longer distances and because of the larger capacity of larger ships, connector buildings were built along the bulkhead wharf to provide more space adjacent to the waterfront for goods in transit. (BSHC [1928]:41)

Later, connecting wharves were described as features of the truck era. Wharves between Piers 24 and 26, 35 and 37, and 48A and 48B "have greatly relieved congestion. It is now possible for 60 trucks to load or discharge at these additional facilities without entering the pier sheds . . ." (BSHC [1938]:56).

Two-Wheeled Hand Truck

The oldest and most commonly used piece of pier equipment was the two-wheeled hand truck. Bridges described it as a "one-man truck with two small wheels on it and you push it along, we would put a cradle on the end of the truck, and across the handle we would put a stick of wood and on that we landed our load" (Bridges NLB 1934:Vol. 3:241). Small loads could be moved by one man. Heavier loads, such as tin plate, required three men, one pulling and two pushing:

> Years ago, say up until 1925, at that time when the freight was hoisted out of the ship it was landed on trucks pulled by hand; the man would land the load on the trucks; they would pull it onto the dock and go over to one pile that was going to a certain destination, to some warehouse uptown and they would put the freight they had on the truck that belonged to that particular man in that pile. Then they would go to the next. They would sort the freight right off their truck and then go back to the ship and get another load. Naturally this going around with a hand truck was slower work than it is now. By the time they went around, for instance you had a load with five or six different markings or destinations in it, it would consume some time in going around on the dock. When you got back to the ship you would have another load hanging there waiting for you. (Bridges, NLB 1934:Vol. 3:215)

The first improvement on the two-wheel hand truck was the four-wheel platform hand truck. The first four-wheeled hand truck was developed in San Pedro in 1907-1908, in conjunction with the first use of the board sling. The main advantage of the four-wheel truck was that ship cargo could be landed directly on the truck platform, and taken into the shed without having to first undo the sling of the load on the apron. With the four-wheel truck, an entire sling could be treated as a unit. This eliminated several handlings of the cargo. (Liebes 1942:26-27)

The condition of the dock floor was a crucial factor in movement of cargo by hand. Many of the old wood floors had rough, dirty and uneven surfaces that would impede the movement of a truck, as Bridges recalled:

> I worked at one particular dock years ago, and remember trucking this milk. We had quite a long truck, a long haul, as we call it, and that dock at that time was a bad dock, it was a very uneven floor, and it was very sticky, it used to stick to the

wheels of the truck and make the truck hard to pull. (Bridges, NLB 1934:Vol. 3:186)

Power Trucks

By the mid-1920s, power trucks had begun to displace hand trucks in the movement of cargo on some San Francisco piers. By the early 1930s, mechanized stacking or piling equipment was replacing the old method of piling cargo known as the hand, or stage system.

Power trucks moved around the apron much more quickly than hand trucks, so the unloading of ship cargo was faster and more continuous. Stern predicted in 1932 that hand trucks would soon be a relic of the past, except for very short distances, or when pier congestion discouraged the use of power equipment. (Stern 1932:13-15)

Jitney: The First Power Truck on the Dock

The jitney was a motorized tractor (gas or electric) that could pull and push four-wheeled hand trucks, or cars, either one at a time or in a train. It was a hauling method rather than a true handling system. The cars themselves were still loaded and unloaded by hand. It was sometimes known as a tractor-trailer system. (Liebes 1942:14; Stern 1932:13)

The first jitney was built to order by a San Pedro employer in 1912-1913. Until then, all cargo trucks had to be moved around the dock by hand. But the use of jitneys did not become widespread until later, they were first used on the San Francisco waterfront in 1924 or 1925. (Liebes 1942:27)

From 1924-1934, the jitney was the most commonly used power equipment on San Francisco piers. It displaced many workers who had formerly operated hand trucks, leading to elimination of jobs on the dock. (Stern 1932: 13; Lewis, NLB 1934:Vol. 2:64-66)

Bridges recalled the introduction of the jitney in San Francisco in about 1924. “When the jitneys came, which was around 1924 or 1925, that eliminated any further pulling by hand of the trucks on the dock. Every man used to pull his own truck then. Now they just land the load on the dock, and get two or three or four loads together and along comes a jitney and pulls them down to the approximate location where they are going” (Bridges NLB 1934:Vol. 3:217).

Captain J. G. Ludlow, vice-president and general manager of the California Stevedore & Ballast Company, described his first observation of the jitney in his testimony before the Longshoremen's Board as a representative of the Waterfront Employers' Union. Ludlow had begun his career as a sailor in San Francisco in 1899, and had served in the Navy during World War I. He believed that the jitney and the double board sling were introduced in the San Francisco Bay Area at about the same time in the mid-1920s. He first saw them used in the East Bay; soon they were being used on the San Francisco waterfront as well.

Ludlow linked the jitney and double board sling to the advent of large piers such as Encinal Terminals in Alameda, and Howard Terminal in Oakland, where loads had to be hauled for thousands of feet. On such long hauls it would, he said, have been impossible to truck the cargo in small loads associated with single board slings and hand trucks. The use of the double board and jitney "was caused by terminal conditions, and the necessity of getting the cargo to the ship's side from a long distance":

> When the terminals came along, necessitating such a long haul, it was found that it just could not be done by hand without putting on an army of men. Therefore, not only you had to have means for dragging it to the ship's side, but the size of the load had to be increased. As a matter of fact, the Encinal Terminal is 1500 feet long, and you often have to work a ship at the end of the dock. 3000 feet is quite a drag. With the old type of load, 18 cases in a load, and hauling by hand, I should say it might take 50 men to get the load to the ship's side now compared with formerly, when terminals were not in vogue, when six men could do the work. (Ludlow, NLB 1934:Vol. 8:569-570)

By 1934, Ludlow noted that the single board sling was very seldom used in cargo handling, and had the appearance of an antique. He had seen one early in 1934, on an older dock with a short haul, noting "It looked like one of the old-time Fords" (Ludlow, NLB 1934:Vol. 8:570).

The big terminals Ludlow referred to were all on the eastern shore of San Francisco Bay. But he also noted that since 1920, many of the piers in San Francisco had been lengthened, and "floored properly," as uneven wood floors were replaced by asphalt (Ludlow, NLB 1934:Vol. 8:589).

Lowlift Truck and Skid System, Early 1930s

Another form of power equipment used on the docks in the early 1930s was the electric lowlift truck and skid system. The skid was a raised platform (with legs about one foot high) used for storage and movement of cargo. The electric lowlift truck had a movable plate that could slide under the skid and lift it off the floor. The lift truck then carried the skid across the pier or into the shed and set it down (Liebes 1942:14; Stern 1932:13).

The lowlift truck was soon improved with the introduction of a highlift truck system that could not only pick up, haul, and set down, as the lowlift truck could do, but could also tier skids in the shed or on the dock (Liebes 1942:14).

Stern noted that at some San Francisco piers, cargo arriving at the dock by train was loaded immediately onto skids, in preparation for movement to the ship's side. Loaded skids were sometimes stored in pier sheds (Stern 1932:13-14).

The use of skids reduced the number of times a cargo would have to be handled, enhancing productivity. But the method had what Stern called "serious drawbacks."

It was only effective for uniform cargoes in standardized packaging, which was not common in 1932. The time and effort involved in standardizing loads for use on skids would not, he believed, be cost effective for most commodities (Stern 1932:14).

The second drawback in the skid-lift truck system was that the skids (both loaded and empty) took up too much space in the pier shed. "Even the larger piers soon find themselves congested with these skids, while the average and the smaller piers, which predominate in this country, can not possibly find the necessary space for a successful application of the lift truck and skid system" (Stern 1932:14; Cribbin, NLB 1934:Vol. 9:616).

Forklift and Pallet as a Radical Change in Pier Equipment in the Late 1930s

The relatively simple lift truck that could lift and move skids in the early 1930s was improved in the late 1930s with the introduction of a more versatile forklift and the replacement of skids with pallets. The forklift and pallet method involved not just lifting and moving but hoisting and tiering of pallets (Liebes 1942:14).

The forklift had many names for its many uses: fork-lift, bull, lift jitney, hi-low, finger-lift. Pallets had first been used as make-shift boards to keep cargo off wet floors. Paired with the jitney, the simple pallet became invaluable (Hagel and Goldblatt 1963:67).

Lincoln Fairley, former ILWU Research Director, described the forklift and pallet system: "A quite radical change in method became common during the war years: before going into the ship, cargo was placed on pallet boards and the pallets were taken under the hook by lift jitneys. Once in the hold, however, the cargo was taken off the boards and stowed piece by piece" (Fairley 1979:55).

The forklift and pallet method, which became widespread during World War II, has been described by other labor experts as a "revolution in methodology," and as "a major development in pre-war longshoring" that "radically changed dock operations" (Fairley 1979:55; Hagel and Goldblatt 1963:35).

Louis Goldblatt , National Secretary-Treasurer of the ILWU in the early 1960s, described the forklift as "the most important and versatile piece of equipment introduced into longshoring" in the early twentieth century. He hailed the forklift and pallet method as "the first important change in longshore operations in decades" (Hagel and Goldblatt 1963:67).

Forklifts were first used to break down and high pile cargo on the dock, facilitating a better use of dock space. Then forklifts and pallets were used to speed up the movement of a slingload of cargo to and from the ship's hook. In later years when unitized cargo was more common, the forklift and pallet system was used for high piling pre-stacked cargo. Using forklifts and pallets, many types of cargo — cartons, canned goods, sacks — could be pre-stacked, standardized and unitized. This sharply reduced the number of times that cargo would have to be moved by hand (Fairley 1961:4; Hagel and Goldblatt 1963:67).

Forklift and Pallet Method Used in Handling of Rail Cargo

The use of forklifts and pallets was a labor-saving measure, and led to a loss of jobs on the dock, especially during the movement of cargo between rail cars and pier sheds, a process known as "indirect transfer." In indirect transfer, cargo is brought to the dock by a rail car or truck, and

stored in the pier shed while awaiting a ship's arrival in port. When the ship arrives, the cargo is moved to the ship's side and hoisted aboard (Liebes 1942:96-97 ; Fairley 1979:26, 55).

Rail service to the general cargo piers at the port of San Francisco was provided by the State Belt Railroad, operated by the Board of State Harbor Commissioners. By the early 1930s, there were tracks on the aprons of individual piers and a main interconnecting line running along the Embarcadero from south of Market Street to Fort Mason and the Presidio. The Belt Railroad in turn connected with all the rail lines serving the port (Board of Engineers 1933:51-52).

With the old hand truck technology, longshoremen had moved all rail cargo on the dock by hand, and piece by piece, from the rail car to the shed and from the shed to the ship's side. Using forklifts and skids or pallet boards, cargo was transferred from a railroad car or truck to a board, before being moved to the shed or warehouse by a lift truck. After the ship's arrival, the liftboard loads (already built by the car-unloaders) were moved to the ship's side by lift truck (Liebes 1942:97-98; Fairley 1979:26-27).

After the introduction of forklifts and pallets, longshore dock workers had only three kinds of jobs in handling rail cargo: car loaders and unloaders, who built loads onto lift boards, lift truck drivers who moved the cargo on the docks, and the sling men who hooked the load to the ship's gear (Fairley 1979:26; Liebes 1942:97-98).

The lift truck driver using skids or pallets displaced a whole gang of dock men using hand trucks. Union protest over the loss of these dock jobs led to eight arbitrations over a two-year period from 1938 to 1939. Longshoremen did not try to ban the new technology but sought a separate agreement covering indirect transfer work at higher rates of pay than other forms of longshore work, to compensate for jobs lost through mechanization (Liebes 1942:238; Fairley 1979:25-26).

According to labor economist Richard Liebes, "The liftboard controversy was felt to carry implications regarding the entire dynamic picture of technological change in the industry" in the late 1930s. The arbitrators supported the employers' right to use trucks and liftboards in the indirect movement of cargo. For longshoremen, the loss of dock jobs to the forklift soon receded in importance. American entry into World War II created a huge demand for longshore

manpower in Bay Area ports. Because of the forklift and pallet method, the norm after the war was the "short gang" (a longshore gang lacking a full dock component), in contrast to the prewar "long gang" (Liebes 1942:238; Fairley 1979:55; Fairley 1961:4).

The fork lift and pallet system, fully established by the end of World War II, was the last radical innovation in cargo handling until the introduction of containers in the late 1950s (Fairley 1979:55).

A Description of Longshore Work in 1934

With modern piers and the availability of cargo handling machinery and vehicles, by the 1930s cargo handling had evolved considerably since the nineteenth century. Still recognizably the same activity, consisting of loading, stowing, and discharging cargo by large numbers of longshoremen, these changes in ship and pier equipment had a profound effect on longshore work.

Labor economist Richard Liebes described a typical longshore operation, circa 1934, after noting the difficulty of generalization in an industry that still lacked consistent standards.

> Dock men move the commodities from the pier shed out onto the apron — that portion of the pier lying between the waterfront edge and the shed — by means of two-wheeled hand trucks; or more commonly, they load sling boards placed on four-wheeled flat trucks which then are hauled by electric or gasoline tractors known as "jitneys" to the ship's side. There are two dock men, known as "front men," "sling men" or "hook-on men," who attach the sling load to the "hook" or fall-line. The hatch tender on deck gives a signal to the winch driver and the draft is hoisted upwards, swung over the side of the ship and lowered into the hold through the hatch, or opening in the ship's decks. The hold men then move the cargo from the "square of the hatch" and stow it in the wings of the ship. In the meantime they have hooked on an empty sling board which is returned to the apron.
>
> In discharging, operations are reversed. The hold gang "breaks out" cargo and loads empty slings; the winch driver lifts loaded slings from the hold and returns empties; the hook-on men guide the slings onto waiting flat trucks and release the hook, and the jitney driver hauls them into the shed where the commodities are

> sorted and classified (if they have not already been sorted on the apron). (Liebes 1942:10)

The rhythm and pace of the work were guided by the longshoreman's time-honored obligation of "meeting the hook," of keeping the cargo moving as Bridges explained:

> It has always been the requirement of every stevedore that he must meet the hook — the expression "meet the hook" means that he must have the load taken away and discharged off the sling board or scow in time to receive the next load that comes down. (Bridges, NLB 1934:Vol. 3:188)

The Board of State Harbor Commissioners described the process from a somewhat different perspective in 1940:

> As soon as a ship enters through the Golden Gate it proceeds to a pier assigned by the Harbor's Chief Wharfinger. When it docks the cargo manifest is handed to one of the state wharfingers and unloading operations commence immediately. The steamship company has called an experienced crew of longshoremen which starts up over the ship's side slinging nets and testing the winches. The hatch covers are pulled off, a sling crew enters the hold and soon the first slingload comes over on to the dock.
>
> The slingloads are lowered on top of small platform cars, all joined up to a motor jitney. Longshoremen release the slings and hook them to an empty flat for reloading in the hold. When the cars are loaded, the jitney driver takes them inside the pier to certain designated areas. Here freight clerks are waiting to tally the cargo and assign it out to trucking concerns for carriage to the shipment's consignees. (BSHC 1941:12)

Late 1930s

At the end of the 1930s when the last piers on the Embarcadero were being completed, the Board of State Harbor Commissioners reiterated the importance of the relationship between engineering and use: "The piers, wharves and terminals of the port have been built . . . to be serviceable for each and every trade for which they were designed . . . (BSHC [1938]:11).

In addition, the Board of State Harbor Commissioners characterized the port as "almost like a city" whose tasks included streetlighting, paving, sanitation, design, construction, maintenance, repair, and dredging (BSHC 1941:14).

Waterfront Restaurants

Cheap restaurants were fixtures on the waterfront for much of its history. Restaurants were housed in the large bulkhead buildings at the inshore ends of the piers and in small, freestanding wood buildings on the bulkhead wharf. Workers who worked indefinite shifts and got off at all hours of the day and night depended on them. Workers had short breaks and couldn't go far to eat — a 1942 schedule allowed 20 minutes for lunch in an eight-hour day and two lunch breaks in a fourteen-hour day (BSHC 1942). Similarly, they served the interests of shipping companies and merchants who depended on the labor force. These restaurants acquired a new purpose and more of them were built after the 1934 strike (e.g., Pier 23 Restaurant in 1937). Whereas before the strike, workers were at the hiring shape-up at 7:00 AM, afterwards many gathered for breakfast on the waterfront, a practice that lasted until the rise of container shipping in the late 1960s (Mills 1979:130).

By 2001 there were five of these restaurants left, one of which — the Eagle Cafe, had been relocated to the second floor of the tourist Pier 39. The Waterfront Restaurant — see Pier 7 (Waterfront Restaurant), a Non-Contributing Resource — is in a structure that is a portion of the old Pier 7 bulkhead building and is associated with the history of the old Pier 7 rather than with restaurants on the bulkhead wharf. Red's Java House at Pier 30 is part of the Pier 30-32 complex which is not included in the district due to its lack of integrity (See Section 8 – Lost Feature. The following three cafes are contributing resources within the district: Pier 23 Café, Pier 28 ½ Restaurant and Java House at Pier 40.

Improvements in Working Conditions, 1950s

Modest improvements in the 1950s also indicate the harsh conditions that prevailed in earlier times:

Lunch rooms were created by partitioning space at the inshore ends of piers in the 1950s. The rooms did not sell food or drinks, but provided tables, benches, and chairs for the men to gather and to eat or play cards like pinochle. Before that time, there was no indoor shelter for men who

brought their lunch; they would eat outside, or in their cars, or sitting on cargo boxes (Erkkila 2002).

Modern flush toilets and hand washing facilities were built on the piers at about the same time as the lunch rooms, in the 1950s. They were in the middle of the piers. Before that time, the only toilets were at the very far end of the piers, and they had open seats like outhouses that emptied right into the Bay (Erkkila 2002).

A survey of conditions at the end of the 1950s reported: "Longshoremen are seldom allowed to utilize shipboard toilets, but must use the facilities on the dock. If these are crowded or located a long distance from shipside, delays in getting back and forth can keep men away from the job for long periods of time." At that time the California General Industry Safety Code required workplace facilities and provided standards. According to the same survey, lunch rooms were not required but were provided in five of nine piers in the survey (National Academy of Sciences 1964:39-40).

A Description of Break-Bulk Cargo Handling, Early 1950s

A description of cargo handling on a San Francisco pier in the early 1950s reads very much like the ones written in the early 1930s and early 1940s, with the notable addition of an emphasis on forklifts:

> General cargo transferred between ship and transit shed or storage is handled almost exclusively by ship's gear in conjunction with lift trucks, tractors and trailers, and other modern pier equipment. The fork lift truck is an effective means of moving large lots of cargo relatively short distances within a terminal, while the tractor-trailer is primarily used to move cargo over longer distances within a terminal.
>
> Normally slingloads of bagged coffee are deposited directly onto "flats" or 4 wheeled hand trucks on the stringpiece. The flats are pulled into the pier shed where empty pallets are lined up on both sides of the doorway. Bags are sorted by lot number as they are taken from the flats and placed on the pallets, 12 bags per pallet. Each pallet contains bags of the same lot number, the checking operation having taken place at that point. Lift trucks carry the pallet loads to

> various storage bays on the pier allocated to specific lot numbers. Here the coffee awaits inland or local transfer, which is usually accomplished by motor truck. (Board of Engineers 1952:175)

The Advent of Containers in the Late 1950s

From 1934 to 1959, shipping companies grew increasingly frustrated over efficiency and production levels in cargo handling. Weakness in industry management contributed to the problem, but another factor was the union's success in controlling work rules such as sling load limits through job action (Fairley 1979:10).

By the mid-1950s, during a period of significant cost increases in the shipping industry, the issue of productivity was a serious obstacle in contract negotiations between the ILWU and the shipping companies. At the same time, the pace of technological change in cargo-handling methods was beginning to accelerate (Fairley 1979:54; Finlay 1988:52-53).

Technological changes were an important topic at the 1956 union caucus. The most important change in cargo handling during the postwar period up to the mid-1950s was the shift to bulk handling (rather than break-bulk handling) of specialized commodities like sugar. Bulk handling, in which a commodity was shipped and handled in bulk rather than in packages like sacks or boxes, led to severe reductions in longshore manpower in the affected cargoes (Fairley 1979:58-59).

A delegate from San Pedro described a brand new method of cargo handling — the container — to the 1956 union caucus. At the time, Matson Navigation Company had just begun to use containers in San Pedro and San Francisco in their shipments to Honolulu (Fairley 1979:58).

Containers were huge rectangular boxes capable of holding tons of cargo. In contrast to break bulk cargo, which was handled at many different points during the course of shipment, the container cargo was handled only two times — when it was stuffed and when it was unstuffed.

As late as 1957, the prevailing opinion among both longshoremen and shipping companies was that containerization would happen slowly. In 1957, the ILWU prepared a Coast Committee report on mechanization that summarized the conventional thinking of the period. "There won't

be any sudden automation in longshore." Everyone was completely unaware of the "container revolution that was just around the corner," as a union staff person, Lincoln Fairley, put it at the time (Fairley 1979:73, 69; Finlay 1988:65).

Neither Bridges nor anyone else anticipated the full impact of containerization in the late 1950s. But he believed that mechanization was inevitable and that the union strategy of trying to hold it back would soon prove futile and even self-defeating. At the 1956 longshore caucus, Bridges described the change in his thinking. "We have reached the point possibly . . . where the battle against the machine for us has become a losing one." (Bridges, in Finlay 1988:59). Knowing that he would encounter resistance from the union rank and file, Bridges spent three years, from 1957 through 1960, trying to win the most favorable package under the circumstances, so that longshoremen would receive a share of the benefits of the machine (Fairley 1979:83).

Mechanization and Modernization Plan, 1960-1971

In 1960 the ILWU and the shipowners' organization, the Pacific Maritime Association (PMA), negotiated what they called the ILWU-PMA Mechanization and Modernization Plan (M.&M.) The agreement was signed in October 1960, and ratified in January 1961, by a vote of the waterfront members of the union.

The main goal of the union was to protect its members against job losses. In addition, Bridges was personally concerned with reducing the back-breaking nature of longshore work. The shipping and stevedore companies wanted to eliminate union work rules — such as sling load limits and manning requirements — in order to pave the way for major changes in technology. Their immediate goal was increased efficiency, but their ultimate goal was unfettered control of operations. The union had gained control of operations through work rules after the 1934 strike, and employers had been trying to regain the upper hand ever since (Fairley 1979:145-150; Finlay 1988:50, 52, 57). For at least one of the engineers who helped to create containerized shipping, one goal was also safety.

Under the M. & M. Plan, employers won major modifications in union work rules (modernization) and an almost completely free hand in the introduction of new technology and new work methods (mechanization). In return for these guarantees to the employers,

longshoremen won some unprecedented benefits: (1) the current work force would not be laid off. (If mechanization necessitated a reduction in the work force, it would shrink from the top, through early retirement); (2) a share in the profits of mechanization through higher wages and benefits; (3) labor saving devices would be introduced wherever possible to make longshore work easier and safer. The union also won an employer-subsidized M.& M. fund that would be used to prevent layoffs and guarantee pay for those who opted not to retire early. (Fairley 1979:1; ILWU 1997:17; Hagel and Goldblatt 1963:3-4)

The initial M.& M., a supplement to the union contract, expired in 1966; it was renewed, after major changes, for another five years, but was discontinued in 1971.

M.& M. was controversial from the outset, among both observers and longshoremen. Lincoln Fairley, an economist who worked on the M.& M. in a union staff position, described the feeling of betrayal among some of the men in 1960, who resented having to give up work rules they had fought so hard to win and hold on to. The M.& M. plan was approved in union votes, but by narrow margins, despite Bridges' appeals. (Fairley 1979:148-149, 166)

The close vote on M. & M. was a harbinger of trouble. Fairley later came to believe that a significant change in cargo handling methods had been forced through too quickly. There was opposition and sabotage on both sides. Union members fell back on job action to preserve work rules and operating companies abused their new freedom to impose work methods. (Fairley 1979:166)

M.& M. Facilitates Containerization

Fairley and other labor experts generally agree that the M.& M. Plan facilitated the process of mechanization that followed. With the exception of Matson Navigation Company, which was the first company to adopt containers in 1956, containerization did not get under way on a large scale until the late 1960s, during the second M.& M. agreement period. Past ILWU President and San Francisco Port Commissioner Brian T. McWilliams recalls that as late as 1967, "the prospect of a bright future for San Francisco's waterfront was generally taken for granted." From that point on, however, with the support of M.& M., the rapidity and extent of the change was truly revolutionary. By 1980, nearly four-fifths of the total tonnage arriving at Bay Area

ports was either containers or automobiles. (McWilliams 2000:22; Fairley 1979:320; Finlay 1988:6, 66; Wellman 1995:160)

Commissioner McWilliams began his career on the waterfront in 1967 as a merchant seaman, at the crucial turning point between break-bulk cargo handling on San Francisco finger piers and the new container port being developed at Oakland:

> When I first started on the front in 1967, the Port [of San Francisco], still managed by the State, had recently invested a large amount of capital in Pier 27, a new finger pier on the northern waterfront. Although this facility was new, it was not modern, and was filled with Pacific Far East Line break-bulk cargo from the skin to the rafters. The state-of-the-art facilities were all taking shape in Oakland. A great deal of the work we enjoyed in San Francisco — coffee, cocoa, frozen meat and of course general merchandise — lent itself very easily to containerization. All this cargo joined the exodus to Oakland and other container ports on the West Coast. (McWilliams 2000:22)

Fairley described the container revolution as part of a broader technological revolution that changed the character of most forms of work in the United States in the late twentieth century:

> M & M facilitated the "revolution" in the West Coast longshore industry. Some changes took place during the M&M decade; more have occurred since. From an antiquated, highly labor-intensive technology not radically changed since sailing ship days, the industry has become capital intensive, with a whole new fleet of speedy, specialized ships — container ships, automobile carriers, paper carriers, bulk carriers; turnaround time has been reduced from a week to in some cases a day, with resulting large capital-cost and labor-cost savings a wholesale shift from break-bulk, loaded and discharged by ships' winches and characterized by multiple handling, to containers handled by monster cranes, and to bulk (ores, grain, sugar, scrap) handled by pouring, suction, dumping and conveyors. (Fairley 1979: 320)

The use of containers achieved huge productivity increases in longshore work. From 1958 to 1980, the total tonnage handled by West Coast longshoremen increased almost five times, and the total tonnage coming through Bay Area ports nearly doubled (Wellman 1995:160).

Containerization also resulted in a precipitous drop in the number of longshoremen working on West Coast waterfronts. Containerization was capital intensive, in contrast to break bulk operations, which were labor intensive. During the 1970s, San Francisco's ILWU Local 10 lost almost half of its registered members (Wellman 1995:160).

Controversy and 1971 Strike over M. & M. and Containerization

ILWU leaders were criticized by union members for not anticipating the container revolution and the devastating loss of work opportunity. Bridges would later say, "Frankly speaking, the ILWU was caught off guard, as were many shipping companies" (Bridges, in Finlay 1988:65).

The loss of work opportunity was just one of many points of controversy within the union over containerization and M. & M., especially among a militant younger generation of longshore workers. The second M. & M. Plan in 1966-1971 allowed employers to introduce a new class of workers for container operations — "steady men " — equipment operators who were not dispatched out of the hiring hall every day but instead reported to work directly to operating companies. Steady men were guaranteed a monthly minimum of hours worked, and worked more hours overall than longshoremen hired through the union hall. Critics contended that the use of steady men was a threat to the dispatch system and to the union principle of equality of work opportunity. (Wellman 1995:72; Finlay 1988:169; Fairley 1979:255-270)

Before 1934, employers had divided longshoremen into two classes of workers — steady and casual. The inequities and abuses of this system were dismantled through the hiring hall after the 1934 strike. Employers claimed that the use of "steady men" was essential for efficiency in certain job categories, and they had been trying to reinstate the practice since the 1930s. They finally succeeded in 1966 with the second M. & M. Plan.

The creation of a new class of steady equipment operators during the second M. & M. period generated heated debate, particularly in San Francisco's Local 10 and in Los Angeles. The container revolution, the M. & M. Plan in general, and the introduction of "steady men" in particular, were the central issues in the ILWU strike of 1971, the longest coastwide strike in United States history. Union members agreed to settle the strike after 134 days but the use of "steady men" as container crane drivers and gear men continued to expand. (ILWU 1997:18-19)

Lincoln Fairley, who had participated in union preparations for M. & M., later expressed doubts about the wisdom of the agreement from the union point of view. In his 1979 book *Facing Mechanization* he posed "The Basic Question":

> The basic question is this: Was it a wise union policy voluntarily to throw overboard pretty much all at one time, many of the Union's exceptional arsenal of work rules? While recognizing that there was no stopping the new technology, might it not have been better to back off slowly, giving up the rules less precipitously and only after a struggle? (Fairley 1979:39)

At the same time Fairley had implicit trust in the judgment of Harry Bridges and other officers of the ILWU, who were unanimous in backing the M. & M. in 1960. Bridges had been proven right in so many of the union's crises over the years (Fairley 1979:328).

Fairley recalled that in the late 1950s, Bridges was most concerned about the survival of the union. Bridges believed that without the M. & M., the union might be forced into a prolonged strike over work rules, a strike that might weaken or even destroy the ILWU. "For Bridges, in particular, this could well have been an overriding consideration; the Union was, after all, very much his creation" (Fairley 1979:328).

Impact of Containerization on the Port Facilities

With the sudden shift to containerized shipping around 1970, the Embarcadero section of the Port of San Francisco saw a sudden sharp decline in shipping activity. Shipping companies moved, mostly to Oakland, and many piers were left vacant. Many of the severely underused piers were not maintained. Some deteriorated and were demolished. Others burned down. Some were given new uses — usually with maritime connections. Some limited shipping has also survived.

As space along the waterfront has opened up, new developments have occurred. Pier 39, a modern entertainment facility with shops and restaurants was designed in 1978. A marina has been built on the north side of China Basin. Pier 7, a recreational pier for pedestrians has been built south of the site of the previous Pier 7 — a working pier. A wharf has been built behind the Ferry Building for restaurants and the BART ventilation shaft. The Embarcadero Freeway was

torn down after it was damaged in the 1989 Loma Prieta earthquake and the Embarcadero has been designed for streetcars, palm trees, and a pedestrian walkway.

While some of the parts of old piers have disappeared, others have been maintained and Pier 1 has been rehabilitated as offices, including those of the Port of San Francisco. The Ferry Building is currently undergoing rehabilitation, and other rehabilitation projects are in various stages of planning as of this writing.

ARCHITECTURE; COMMUNITY PLANNING AND DEVELOPMENT

Significance

The Port of San Francisco Embarcadero Historic District is eligible for the National Register of Historic Places under criterion C at the local level of significance in the related areas of Architecture and Community Planning and Development as a manifestation of the City Beautiful Movement. Both the architecture of the individual buildings and the consistently realized policy of the Board of State Harbor Commissioners that resulted in a three-mile arc of decorated pier fronts reflected the same goals, the same models, and the same architectural training. After its early years when the port's buildings and structures lacked any architectural embellishment, almost all the buildings at the port — the Ferry Building (completed 1903), those piers built between 1912 and 1938, and various other early twentieth century buildings — were provided with monumental architectural imagery. Executed in a variety of styles, the designs of these buildings reflected the goals of the City Beautiful Movement — to modernize and beautify American cities including their industrial and working districts — by means of rational planning, up-to-date technology, and architectural design. In addition, the impressive looking new waterfront represented the efforts of Progressive reformers in California and San Francisco politics and the substantial role of the port of San Francisco in seeking to realize the imperial aspirations of the United States in the Pacific. The architectural and urban design of the port and its buildings was conceived and subsequently developed in the context of a number of other notable achievements of the City Beautiful Movement, including the Burnham Plan for San Francisco of 1905; Chelsea Piers in New York of 1907; the San Francisco Civic Center, begun in 1912; and the Panama-Pacific International Exposition in San Francisco of 1915. The district is

significant at the local level.as it is a prominent example of an architectural and planning movement — the City Beautiful Movement — which was important in San Francisco.

After a long initial period of indifference to the appearance of the port, in 1892 the Board of State Harbor Commissioners hired the important San Francisco architect, A. Page Brown, to design a ferry terminal at the foot of Market Street in the middle of the port. With the assistance of a talented staff that included others who would become prominent San Francisco architects — notably Willis Polk and A. C. Schweinforth — Brown prepared a design for the Union Depot and Ferry House (commonly called the Ferry Building) drawing on a variety of Renaissance and American examples.

Proposals for the beautification and improvement of the rest of the waterfront came from several sources, including the Burnham Plan of 1905. D. H. Burnham and his associate Edward H. Bennett addressed the waterfront in the context of the whole city.

Damage to the piers caused by the earthquake and fire of 1906 provided the practical necessity of rebuilding the piers. Anticipation of the opening of the Panama Canal in 1915 and competition with other west coast ports for increased trade brought by the Panama Canal and prospects for trade across the Pacific provided a deadline for improvements.

As planning began in response to these same events for the new San Francisco Civic Center in 1912 and the Panama-Pacific International Exposition which would open in 1915, so the port also began developing a program for architectural imagery in this period. These three undertakings responded to the same influences — reform efforts of Progressive politics; pride in the United States newly established international stature following the annexation of Hawaii and victory over Spain in the Philippines; and the imperial ambitions of San Francisco, the state of California, and the United States toward commercial possibilities around the Pacific Ocean.

The architecture associated with these influences was that inspired by the City Beautiful Movement, generally carried out by architects trained at the Ecole des Beaux Arts in Paris or in ateliers or schools in the United States that used the same methods. At the port of San Francisco, City Beautiful Movement ideas became associated with plans for modernization of the port after

the earthquake and fire of 1906. The ornamentation of both the inshore and outshore ends of the piers in the spirit of the City Beautiful Movement between 1912 and 1938 would provide an attractive face to the city and it would also create an orderly waterfront in the place of the previous chaos. When this development ended the Embarcadero section of the port was fully built up.

The first new piers to follow these ideas beginning in 1908 were built south of the Ferry Building with facade designs drawing on the Spanish missions of California and more generally on Mediterranean vernacular architecture which was seen as in an appropriate spirit for California. These piers reflected a wider effort to develop an architecture that reflected California's history and character. Like many Southern Pacific and Santa Fe railroad stations, it was part of an effort to market California to outsiders as a special place which was not brand new but which had its own honorable and romantic history. In this case, passengers debarking at these piers would find grand buildings that seemed to belong to California rather than buildings that reminded them of Rome, Paris, New England, or any other place.

The second phase of pier construction, beginning in 1915, was north of the Ferry Building where a Neo-classical imagery was chosen. These facades were stylistically like buildings at the Panama-Pacific International Exposition and the Civic Center. They were directly inspired by the Chelsea Piers in New York, nine piers and bulkhead connectors along 13 blocks of New York's Hudson River waterfront designed by Warren & Wetmore, architects of Grand Central Station. The Chelsea Piers were proposed in a 1907 city plan and completed in 1912 as part of a reconstruction of the waterfront in fire resistant materials. Beautification of the port of San Francisco was approached incrementally, but like Chelsea Piers, there was a larger objective — the improvement of the port at the scale of the city.

In the late 1920s, piers at either end of the continuous development of piers along the Embarcadero were built with gothic imagery. These were built in a different style to reflect their distinctive plans and large size. The gothic style also reflected a shift from the civic values reflected in the Mission and Neoclassical styles to business-centered values.

Most of the piers and other buildings and structures of the port were designed under the supervision of the Chief Engineer of the Board of State Harbor Commissioners. The staff of the Chief Engineer was dominated by engineers, but included two architects.

The port of San Francisco Embarcadero Historic District is eligible for the National Register under criterion C in the related areas of Architecture and Community Planning and Development because it embodies "the distinctive characteristics of a . . .period (United States Department of the Interior *Bulletin 15* 1991:17-18) — it embodies the distinctive characteristics of an important aspect of American architecture and city planning, the City Beautiful Movement of the late nineteenth and early twentieth centuries. It is significant for a discontinuous period — 1896 to 1903 when the Ferry Building was built, and 1912 to 1938 when the piers and other architecturally embellished features were built.

Background

Architecture and Public Image

Early Indifference to Appearances

During the nineteenth-century development of the port, little if any attention was paid to the appearance of the port's buildings, with the notable exception of the Ferry Building. The long waterfront north and south of the Ferry Building was a working area like a railroad yard or a large industrial plant. There was no public interest in improving the appearance of an area which was primarily frequented by port workers. There is no record of concern about the impressions of ship passengers. The designers and builders of the port's facilities had one task — to build practical structures as cheaply as possible. In endeavoring to carry out this task, the port had to contend with the frequently changing requirements of shipping and cargo handling and with the short life expectancy of wooden structures in water. Even if anyone had proposed building architecturally embellished buildings, it would have been impractical to build them, because waterfront structures had to be replaced so often.

The earliest efforts to improve the appearance of waterfront buildings were perfunctory gestures in the only area regularly encountered by the general public — at the foot of Market Street. The original Ferry House, which stood from 1875 to 1896, was a long wooden shed with a central

tower, three symmetrically placed gables, and an orderly arcade across the front that screened a chaotic interior.

In contrast to the plain working buildings elsewhere on the waterfront, this was decorated by the restrained use of chamfered, turned, and jigsawn elements and by the placement of painted signs in a planned manner — in the frieze of each bay. Other modestly decorated buildings were located on port property nearby. Near the northwest corner of the Ferry House was a two-story wood structure (perhaps for the chief wharfinger, as it stood in the vicinity of two later chief wharfinger offices) that was indistinguishable on the exterior from Italianate style dwellings built by carpenters all over San Francisco. At the opposite end of the Ferry House, the branch receiving hospital was a small one-story structure with decorative window and doorframes typical of the period. Elsewhere, port buildings were plain industrial sheds.

Because of the extremely heavy traffic — pedestrians, cable cars, streetcars, horsecars, and omnibuses — passing back and forth in front of the ferry terminal, private property owners facing the waterfront at the foot of Market Street and for a couple of blocks on either side sought to draw attention to their businesses. The primary means of attention-getting was by large signs, sometimes on roofs, sometimes obscuring almost entire buildings.

North and south of this central business area, the working zone of the port extended inland from the waterfront. Beginning about 1890, this working zone included the tracks of the Belt Railroad in East Street (later the Embarcadero), and a series of rail yards in the seawall lots inside of the tracks. Inland of the seawall lots were warehouses, factories, and scattered lodging houses and saloons. Like the buildings along the waterfront, the buildings elsewhere in the working zone were generally plain structures.

The Ferry Building: A Stylish Anomaly on the Waterfront

In the late 1880s, the Board of State Harbor Commissioners decided to replace the 1875 Ferry House with a larger and more efficiently planned structure. The new building would be of great importance as San Francisco's principal transportation terminal: the transcontinental railroad ended here via passenger ferry from Oakland, the many cross-bay ferry boats brought thousands of workers to the city each day, and the city's several street and cable car lines all terminated at

the foot of Market Street on the city side of this site. Recognizing not only the important functions this building would serve, but also its symbolic importance, the Harbor Commissioners hired the successful architect, A. Page Brown, to begin designing it in 1892.

Brown had come to San Francisco in 1889 from New York, where he had worked for McKim, Mead, and White, the best known architectural firm in the United States at that time. Like McKim, Mead and White, Brown hired promising young architects, many of whom went on to successful careers elsewhere. Among his employees were Willis Polk, who had previously worked with Charles B. Atwood at the firm of D. H. Burnham & Company in Chicago, and A. C. Schweinfurth who had previously worked with Brown himself in New York.

Richard Longstreth, the author of a study of these architects, wrote of the new Ferry Building: "Schweinfurth, who had charge of the design, patterned the facade's main block after Charles Atwood's railroad station at the Chicago Fair, then the academic movement's only precedent for a building of this type in the country. Above, he placed a tower that combines aspects of those on the Piazza San Marco in Venice and the Giralda at Seville . . . here rendered in a severe, almost Neo-Classical manner. The tower served as a beacon identifying the complex from across the Bay and from the further reaches on Market street" (Longstreth 1983:241; see also Shepp and Shepp 1893:325). The long wings of the building recall McKim, Mead, and White's Boston Public Library with its two levels of round-arched openings (Placzek 1982:Vol. 3:143). Construction began on the Ferry Building in 1896. It was partially occupied in 1898 and was completed in 1903.

When it was completed, the Ferry Building was an anomaly on the waterfront. While it might have suggested the possibilities for embellishing other port buildings, there is no evidence that any such influence was felt for many years. The only other ornamented building on the waterfront in that era was the Richardsonian Romanesque style Post Office, just southwest of the Ferry Building, built in 1900-1901 (BSHC 1898-1900:8-9; Olmsted1998:26). At the time planning began for a new post office only a little more than ten years later, this was described as "an eyesore and an impediment to traffic" (BSHC 1914:17).

Willis Polk's Proposal for a Peristyle and Arch at the Foot of Market Street

Before the Ferry Building was completed, a proposal was made by Willis Polk to improve its setting at the foot of Market Street. Polk may already have influenced the design of the Ferry Building in his 1891 drawings, that included campaniles, for a proposed 1900 World's Fair in San Francisco (Longstreth 1983:224-225). Or the tower was "possibly designed by Polk" (Brechin 1990:47). According to Longstreth, the new Ferry Building's effect "was greatly diminished by the dense pierside traffic and nearby shabby structures. Polk's proposal sought to organize this congestion and subordinate it to an ensemble commensurate with the ferry building's key functional and urbanistic role." (Longstreth 1983:241). Polk proposed a semicircular peristyle curving westward from the ends of the Ferry Building to a triumphal arch at Market Street. On either side of Market Street, outside of the peristyle, were two-story arcaded commercial buildings that provided an orderly edge to the previously disorderly space in front of the Ferry Building. Again, according to Longstreth, "At that time, the design was more ambitious in scope than any other permanent scheme proposed as a civic ornament in the country" (Longstreth 1983:242).

What Polk and the supporters of his scheme apparently failed to recognize were the functional needs of the port, which made the proposal impractical. While at the time the proposal was first made in 1897 the Belt Railroad did not yet cross Market Street, it was already planned. If the peristyle was built, the railroad would never get through and the operation of the port would be inhibited. Polk's proposal was repeatedly publicized until 1910 (Longstreth 1983:242-243, 385), and was apparently shelved after the Belt Railroad was built across Market Street in 1910-1911 (BSHC 1914:19). The fate of Polk's proposal perfectly represents the priorities of the Board of the State Harbor Commissioners and the real needs of the working port.

The Burnham Plan

Among the supporters of Polk's proposal were Daniel H. Burnham and Edward H. Bennett in their 1905 plan for San Francisco — commonly called the Burnham Plan — where it was mentioned briefly (Burnham 1905: map of future development, following p. 184; p. 211) among many other ideas and places, including the waterfront. With respect to the waterfront as a whole, Burnham and Bennett's principal interests were in enlarging the port for economic reasons,

providing recreational facilities along the bay, and connecting different parts of the city, including linking the waterfront to working class residential areas by new streets:

> The freight depots, docks and wharves group naturally on the water-front. They should be planned for indefinite expansion and connected with a complete system of warehouses — served on the one hand by railroad tracks or canals and on the other by broad roadways. The warehouse system should be so schemed as to distribute the raw material directly to the manufacturing quarter, and other products as directly as possible to the wholesale trade districts. These in their turn must distribute easily to the retail quarter. The retail quarter follows, in general, in its growth, the residential districts which it serves, limited by the steeper grades of the contours. Thus the whole working city is governed in its location and growth by the two conditions of a maritime city — the water-front and the available level ground.
>
> San Francisco possesses about ten miles of water-front. As compared with other large cities this is very little, and there is no doubt that it will be inadequate to the needs of the future. Although there is nothing to check its expansion down the eastern bay shore to the county line and beyond, its value decreases as it becomes more remote from the center of the city. It is therefore thought necessary to develop as much as possible that part of the water-front extending from the ferries to Hunter's Point. A system of docks, inclosed by the sea wall, as shown on the plan, would triple or even quadruple the extent of wharfage. The increased quantities of cargo would be stored in a system of extensive warehouses, thus concentrating shipping as much as possible.

And, referring to a proposed new road, which he called the Outer Boulevard, that would encircle the city, Burnham suggested, "It is necessary to connect it with that section of the city lying near it, inhabited by people of moderate means. When the main arteries from this section intersect it, there should be piers for public recreation, a yacht and boat harbor and vast bathing places, both inclosed, and open air. People will seek the Outer Boulevard, and will find refreshment and benefit from the water frontage. The design of the roadway arranges for this without interfering with its use for shipping" (Burnham 1905:42).

In addition, Burnham and Bennett made the first known suggestion for improving the appearance of the waterfront as a whole. They described the waterfront for two segments of their proposed

Outer Boulevard which would circle the city near its perimeter. For that section north of the Ferry Building, they wrote:

> Taking the foot of Market as a starting point, the Outer Boulevard runs north along East Street, traversing the docks and passing around the base of Telegraph Hill. The direction of this part follows the line of the water-front; where it passes close to the wharves it cannot take the same level as the street, but must be elevated. It is therefore proposed to carry it over the warehouses, its roadway forming their roofs. This will give the city an extensive line of fireproof storage property and will enhance the value of the neighboring realty. This elevated part of the boulevard may be beautifully treated. There should be enough space to allow a foot or two of earth for planting. It will then be an ideal place for a ride or a walk, the passer-by looking down on the shipping below, and when he tires of watching the activities and listening to the voices of the men engaged in the work of the port, he may note the changing aspects of the sea and study the effects of sunshine and shadow on islands and mountains seen through the masts of the ships. This treatment will lend delightful variety to a drive on the boulevard, and will add a special charm to the life of the city. (Burnham 1905:53)

South of the Ferry Building, heading north, Burnham and Bennett had much less to say: "following East Street to the foot of Market, which was the point of starting, the outer boulevard completes its circuit of about thirty miles" (Burnham 1905:54). No additional text or drawings elaborate on the Burnham plan's proposed treatment of the waterfront except for general recommendations for the "adornment of streets and related matters by means of the design of curbs, sidewalks, lamp posts, and letter boxes; regulations regarding building heights, commercial signs and cornice heights; and the use of commemorative monuments, fountains, etc." (Burnham 1905:179-180). All of these things might have beautified the waterfront, but there is no record that they were even discussed by the Board of State Harbor Commissioners whose responsibility they would have been. The Burnham plan was presented to the mayor and Board of Supervisors of San Francisco; the Board of State Harbor Commissioners was a state agency. Burnham and Bennett's recommendations would have been expensive to realize and they would not have contributed to the operation of the port.

Other Proposals

While Polk's proposal was going nowhere, concern for improving the area in front of the Ferry Building took other forms. In November of 1908, the Outdoor Art League advocated "improving the appearance of East Street opposite the ferry depot, where above a row of wooden shacks, there rises a skyline of noisily colored advertising signs" — legally the concern of the city rather than the port (*San Francisco Call* 1908c).

Ultimately, attention was paid to the appearance of the waterfront as a whole not so much because of the concerns about the waterfront by itself as because of broader concerns about the city, of which the waterfront was a part. Looking forward to the Panama-Pacific International Exposition (PPIE) in 1915, Horatio Stoll, a journalist, wrote in the *Architect and Engineer*: "We want to be able to show the millions of people who will visit San Francisco in 1915, when the Panama-Pacific Exposition is in full swing, that we have a sense of civic pride" (Stoll 1910:45). Stoll addressed ideas of beautification familiar from the Burnham plan and commented on several parts of the city, including the foot of Market Street: "It is true our Ferry Building is striking and unique, but whatever good impression is made from the water side is lost the moment the visitor passes through the building and looks out upon East Street. The semi-circle of temporary wooden buildings, topped with hideous signs, gives the city an air of crude provincialism and makes the stranger smile" (Stoll 1910:52). While Stoll reiterated old concerns, he did so in the context of advocating general beautification of the public buildings and places of the city, including the waterfront.

In 1912, San Francisco's Commonwealth Club, which like the Chamber of Commerce routinely studied areas of public concern such as the port, addressed the appearance of the waterfront. The Commonwealth Club noted as precedents that a new plan for New York's port included a park and that along the riverfronts of Antwerp and Vienna, "artistic development [was] greatly promoted" (Commonwealth Club of California 1912:27, 28). In speaking to the Commonwealth Club, the president of the Board of State Harbor Commissioners, J. J. Dwyer, stated, "in reference to the port's current plans, we are trying to make this new construction ornamental as well as useful to the city" (Commonwealth Club of California 1912:39). Dwyer modified a Burnham proposal, suggesting a rooftop promenade and outlook. Dwyer reiterated this idea in

1915: "Plans are being perfected to provide walks on the roofs of several of the docks" (*San Francisco Examiner* 1915a).

Beautification of Pier Fronts

In a 1917 construction handbook, *Wharves and Piers*, Carleton Greene wrote about transit sheds: "The facades of such buildings as well as the outshore ends of the pier sheds call for architectural ornamentation and embellishment to fit the aesthetic requirements of the structure and the locality" (Greene 1917:161). He illustrated this idea with drawings and photographs of the Chelsea Pier Sheds in New York, the 33rd Street Pier Shed in Brooklyn, Commonwealth Pier 5 in Boston, and the Pier 30-32 pier shed in San Francisco. For two of these, he showed both inshore and outshore ends, the outshore ends being much more simply and sparingly ornamented (Greene 1917:159-161).

Indeed, the first of San Francisco's piers with ornamental fronts were designed in 1912 while Dwyer was president of the Board of State Harbor Commissioners and Augustus V. Saph was Assistant State Engineer. In the Biennial Report of 1910-1912, Saph wrote, regarding Piers 26, 28, and 30-32: "A modified Mission Style has been adopted for the front. This will serve to make the waterfront more attractive and will, it is thought, meet with general approval" (BSHC 1913:46). Two years later, with reference to a planned series of new piers, Saph's successor, Jerome Newman, wrote, "To add to the attractiveness of the front, the old ugly type of shed front was abandoned and the pier fronts south of Market Street are to be built in modified mission style, those north of Market Street being designed on the lines of the Chelsea piers in New York" (BSHC 1914:45). For the public appearance of almost all the piers that were subsequently built and that survive in the historic district, this was the crucial moment.

This moment came for two reasons: a change in attitude represented by the City Beautiful Movement, discussed below, and innovations in building technology that made it economically reasonable to invest money in architectural appearances. The lifespan of most piers up to this time was limited by the rapid deterioration of wood structures exposed to seawater, salt air, and especially to destructive marine creatures commonly called shipworms. As long as piers had to be frequently replaced, it made no sense to spend extra money on their appearance. However, with better technology — notably with the Holmes patent for concrete-jacketed piles of 1901 and

especially with the satisfactory use of reinforced concrete in 1908 — the longevity of piers increased substantially (see also Criterion C, Engineering section). Reinforced-concrete piers were described as “permanent.” With a shift to long-lasting construction, the cost of beautifying pier fronts could be justified. In relation to the cost of an expensive reinforced-concrete pier that would last many decades, the one-time price of an ornamental facade did not seem an unreasonable expense.

City Beautiful Movement

While no additional information about either the desire to beautify the piers or the particular style choices has been discovered, these can be understood in relation to broader historical and architectural developments of the time. The desire to improve the appearance of the piers was an aspect of the City Beautiful Movement. The City Beautiful Movement is generally considered to have begun with the World's Columbian Exposition — the Chicago World’s Fair — of 1893 which, as discussed above, had already provided models for the design of the Ferry Building. The Chicago World’s Fair was a temporary exposition of grand public buildings located around landscaped courtyards and pools, embellished with heroic statuary. The leading figure of the City Beautiful Movement, Daniel H. Burnham, was the author of several city plans including plans for San Francisco in 1905 and Chicago in 1909, which attempted to recreate some of the success of the Chicago World’s Fair in permanent urban settings. In these plans, he proposed the general improvement of American cities through the selected actions of public authorities, such as the creation of ornamental streets, the establishment of cornice heights and height limits, the placement of monuments and fountains, and the design and construction of monumental public buildings and ensembles of public buildings.

City Beautiful ideas were unusually popular in San Francisco, where they were realized more than in most American cities. Just before the earthquake and fire of 1906, the Board of Supervisors adopted the Burnham plan as the city’s policy. While the earthquake changed the conditions under which the plan had been written, nevertheless many aspects of the plan were realized over the next thirty years or more. Among these, in more or less modified form, were the park on top of Telegraph Hill, Aquatic Park, Park Presidio, the Great Highway, O'Shaughnessy Boulevard through Glen Canyon, and the Civic Center. (By the time it was built,

the Civic Center was in a different location and in a completely different design from Burnham's.) The Civic Center was the ultimate expression of the City Beautiful Movement in San Francisco.

While it was not part of Burnham's plan, the Panama-Pacific International Exposition itself was an expression of similar ideas about planning and architecture. Like the Chicago World's Fair, it consisted of an arrangement of monumental public buildings around courtyards and pools. The exposition was also a celebration of San Francisco's rapid and impressive reconstruction after the 1906 earthquake and fire. In a more practical sense, it was a marketing effort asserting that San Francisco was the best of the Pacific Coast ports to benefit from trade through the newly opened Panama Canal. San Francisco was ready to follow the United States' military victory in the Philippines with a commercial conquest of trade routes across the Pacific Ocean. The port would be the primary agent of the great prosperity that would soon come to San Francisco. In addition to the business and symbolic links between the port and the Panama-Pacific International Exposition, the two were physically connected by an extension of the Belt Railroad through the Fort Mason tunnel.

Apart from Burnham's plan and the Panama-Pacific International Exposition, the City Beautiful Movement influenced the location and design of many projects in San Francisco, including the decorated fronts of the Stockton Street tunnel, which connected the downtown hotel district to the exposition; the placement and designs of numerous hillside walkways and balustrades throughout San Francisco; the monumental designs of many downtown buildings; the monumental designs of power substations of the Pacific Gas & Electric Company; and not least, the decorated inshore and outshore ends of the piers along the Embarcadero. The decorated piers were not proposed by Burnham, but they were in the spirit of his suggestions for the waterfront and were similar to other City Beautiful era projects in San Francisco.

The City Beautiful Movement was generally promoted by architects who had studied at the Ecole des Beaux Arts in Paris, the leading architectural school in the world at that time, or at any of a number of schools or ateliers in the United States that were influenced by the Ecole des Beaux Arts. Although City Beautiful Movement buildings were typically in monumental classical styles, sometimes referred to as Beaux-Arts classicism, neither the City Beautiful

Movement nor the Ecole des Beaux Arts had an essential connection to any particular styles. More important were the principles associated with the Ecole des Beaux Arts and the goals of improving and beautifying the city as a whole. The Ecole des Beaux Arts taught a method of designing that used principles of hierarchy, symmetry, axiality, and unity.

In the United States, the City Beautiful Movement was associated with the politics of reform, usually by members of the Progressive or Republican parties. Reform efforts were directed against corrupt machine politics typically associated with labor interests and immigrant groups. In California, much of the reform effort was directed at the control of politicians and political parties by the Southern Pacific Railroad. In San Francisco, the reformers' greatest victory was the successful prosecution for graft of political boss Abraham Ruef and Mayor Eugene Schmitz. Reformers promised to apply good business practices to government as well as standards of honesty, openness, and fairness. Among the major City Beautiful efforts in the United States that were adopted as emblems of reform were the Macmillan Plan of 1901 for Washington, D.C. and the San Francisco Civic Center.

The imagery of the City Beautiful Movement was also associated with the United States' new status as an imperial nation following the annexation of Hawaii and the conquest of the Philippines. In San Francisco, this imagery expressed the "self-professed imperial destiny" of the city's commercial and political leaders (Brechin 1990:40). Because the port provided the principal means for achieving the city's imperial destiny, it was natural that its piers would be decorated in the imagery of the City Beautiful Movement.

Modified Mission Style

As for the particular styles chosen for San Francisco's pier ends, in the absence of any record of discussion at the time, the reasons for those south of the Ferry Building in the "modified Mission style" can only be surmised. In a very general sense, designs for buildings in California that drew on the Spanish missions and more generally on Mediterranean vernacular architecture were part of an effort to develop an architecture that reflected California's history and character. Like the many Southern Pacific and Santa Fe railroad stations, these were part of an effort both to establish a distinctive identity for California, and to market California to outsiders as a special place which was not brand new but which had its own honorable and romantic history.

At the time the decision was made to build Mission Style pier ends south of the Ferry Building, that area was not linked to the area north of the Ferry Building by the Belt Railroad. In the nineteenth century, the southern area had only been served by the Southern Pacific. In fact the area south of the Ferry Building was sometimes referred to as Southern Pacific territory. Whether it was intentional or not, the use of imagery associated with the Southern Pacific in an area which it long served exclusively may have reinforced the connection between that part of the port and the railroad.

Although the modified Mission Style employed in this area is not normally associated with the City Beautiful Movement, its use here on a grand public scale reflected the goals and principles of the movement. (In fact, there were many examples of Mission or Mediterranean style civic ensembles in California in the early twentieth century that reflected these same goals and principles, including Ojai, Riverside, Palos Verdes Estates, and Santa Barbara.)

The fire station at Pier 22½, while more Mediterranean than Mission in style, was compatible in its stucco walls and red tile roof with the Mission style pier fronts

Neo-Classical Style

Like the use of modified Mission Style designs south of the Ferry Building, there are no records of the reasons for the choice of Neo-classical pier ends north of the Ferry Building. The reference to the Chelsea Piers in New York established the most modern port facilities in the largest port in the United States as a model. As New York dominated United States trade on the Atlantic, San Francisco aspired to dominate trade on the Pacific. New York's port was facing the same issues as San Francisco's at the same time. The length and width of piers, the construction of transit sheds and rail spurs on the piers, and the use of materials that were considered both permanent and fire resistant were all means of better serving larger ships and providing for more efficient cargo handling in both ports. The decoration of the ends of the piers that met these other needs called attention to the investments that had been made, the aspirations of the port managers, and the capabilities of the port. They also reflected a new concern for the port's public image in the spirit of the City Beautiful Movement.

The Chelsea Piers, proposed in 1907 and completed in 1912, consisted of nine piers and their bulkhead connectors along thirteen blocks of the Hudson River waterfront below West 23rd Street (Stern 1932:49-50). They were designed by Warren and Wetmore, architects of Grand Central Station, with lavish, oversized details and rich sculptural elements. The Chelsea piers provided a unified streetscape of identical pier fronts alternating with bulkhead connectors. San Francisco did not copy the Chelsea Piers directly but took the general idea as inspiration. New York's gabled pier fronts with wide arched openings and two-story bulkhead connectors provided the basic model, but the proportions and fenestration were different to accommodate somewhat different functional requirements.

Whereas the Chelsea Piers were unified and regular, probably because they were built as one project, San Francisco's pier fronts varied considerably in small ways. San Francisco's pier fronts took more than twice as long to build as those in New York under a series of changing administrations. While the Chelsea Piers were designed by one of the leading architectural firms in New York, whose design partner studied at the Ecole des Beaux Arts, San Francisco's pier fronts were designed primarily by junior level engineers. Only a few of San Francisco's pier fronts were designed with the participation of an architect. Piers 3, 24, and 31 were designed by A. A. Pyle, an unlicensed draftsman. Pier 5 was designed in 1920 by Arthur D. Janssen, who did not receive his architectural license until several years later.

Gothic Revival Style

At the two extreme ends of the Embarcadero Historic District, Pier 45 on the north and Pier 48 on the south were designed with Gothic ornamentation of their facades. Pier 45 was somewhat removed from the principal group of piers, separated from Pier 41 by a car ferry slip at Pier 43, and was adjacent to a different type of neighborhood than that of the others — Fishermen's Wharf. Pier 48 was separated from the main group of piers by China Basin. In addition to their locations and the styles of their facades, these piers were distinct for other reasons as well. They were the first piers wide enough to accommodate two parallel transit sheds. In addition, Pier 45 was longer than any of the other piers — built at an angle so that its length would fit inside the official pier head line. These piers were intended to be the most modern and efficient on the waterfront for a new generation of larger ships and bigger business.

While the port did not explain the use of a different style for these piers, the difference in size and layout between them and other others must account for the choice. The different style helped call attention to the other differences and at the same time provided a unified image for a new type of larger pier. As for the use of Gothic, this was a common style used for business buildings in the 1920s — for example, the 31-story Russ Building of 1927 was the tallest building in San Francisco.

Other Styles

Two other styles are represented in the district, neither of which appears to have been designed with special consideration of its architectural relationship to the other waterfront buildings.

The building now called Pier 29 Annex was originally built near the north end of the Ferry Building as a small office building. With its stucco walls and decorative tile detail, this would have been compatible with the Mission style buildings later built south of the Ferry Building. With its vertical band of windows under overhanging eaves, it was inspired by Prairie Style models. At the time it was built in 1909, the two sides of the waterfront on either side of the Ferry Building had not yet been allocated to the Mission and Neo-classical styles.

The Ferry Station Post Office Building, later the Agriculture Building, was built in 1914 in the manner of many U.S. Post Offices around the country designed by the Supervising Architect of the U.S. Treasury. Under a series of Supervising Architects, James Knox Taylor (1897-1912), Oscar Wenderoth (1913-1914), and James A. Wetmore (1915-1933), a large number of post offices were two- or three-story rectangular structures with hip roofs and materials, colors, and details that suggested small palaces of the Italian Renaissance. Although the Ferry Station Post Office was designed by A. A. Pyle under Chief Engineer Jerome Newman of the Board of State Harbor Commissioners, its design followed this common pattern of federally designed post offices. Thus, for the post office, its designers chose an image that associated it with other buildings of its type rather than with other port buildings.

Response to the Beautified Piers

When the first of the decorated pier fronts was completed, the *Architect and Engineer* wrote admiringly: “Some wonderful changes have been effected along the San Francisco water front,

and the dilapidated, unsightly buildings which once distorted the bay and street frontages are, happily gradually giving way to substantial structures, carrying more than a mere suggestion of architectural beauty" (*Architect and Engineer* 1915:65). The article was illustrated with photographs and drawings of the new modified Mission Style buildings south of the Ferry Building — Pier 16-18-20, Pier 26, Pier 28, and Pier 30-32. The article also included drawings of two buildings with classical and Renaissance imagery, an unspecified "New Pier Entrance" similar to those that would soon be built north of the Ferry Building, and a "building for the Wells Fargo Express Company" south of the Ferry Building.

The published drawing of the "New Pier Entrance" is similar in design to several pier fronts (especially Piers 1, 3, 5, 29, 31, 33, and 35) but it differs from all of them in fenestration. In the richness of detail, it is more like the Chelsea Piers than like any of San Francisco's piers as they were built. The drawing is by a skilled architectural draftsman and is different in artistic quality from the as-built drawings on file at the port. The published drawings were attributed by the *Architect and Engineer* to the "Architectural Division, State Department of Engineering," under the direction of the State Architect, George B. McDougall. In the face of other sound evidence to the contrary, these attributions raise the possibility that the Architectural Division may have been involved in work at the port. Perhaps the Architectural Division prepared proposals for the pier fronts and other structures that were modified by the staff of the Board of State Harbor Commissioners. (For a few years, from 1908 to 1931, the State Architect and the assistant state engineer for the Board of State Harbor Commissioners were both appointed by the State Engineer. They may also have both occupied offices in the Ferry Building.) Apart from this reference in the *Architect and Engineer*, there is no indication on any of the drawings of extant buildings or in the available records of the Board of State Harbor Commissioners that the Architectural Division participated in any of the designs of the port's buildings. Unless further research shows that the Architectural Division contributed to the port's buildings, it must be assumed that the port's buildings were designed by the staff of the Chief Engineer of the Board of State Harbor Commissioners.

In a subsequent article in the *Architect and Engineer*, although the author clearly confuses the work of the State Architect and the Chief Engineer for the Board of State Harbor

Commissioners, it is again implied that the Post Office (now the Agriculture Building), the Wells Fargo Building (on a pier south of the Post Office), and other "harbor front buildings" were products of the State Architect. Whoever may have designed them, the influential critic B. J. S. Cahill considered them individually well designed but disappointing as a group: "They are strong, dignified buildings and though not carried out quite in the spirit of the original designs, they serve their ends by the substantiality of their aspect and sane economy in the material and detail of their architectural composition. Although one might deplore the fact that in such a long succession of structures lining the Embarcadero, some more unifying type of design was not adopted that would tie this fine sweep of buildings into one splendid and extended composition" (Cahill 1918:71).

Continuation of the Architectural Program

Thus, by mid-1914, the program for architectural decoration at the port of San Francisco was established. This program would be followed almost without exception through the late 1930s along the waterfront defined by the original seawall and its immediate extensions. By that time, the central section of the port was fully developed. The architectural program was not followed for the extension of Pier 36 in 1917, or for developments south of Pier 48. It is not clear why Pier 36 was not decorated like its neighbors. It may be simply that its construction was at a time when money was particularly scarce due to the shortages and demands of the war in Europe. As for the developments south of Pier 48, these were farther from the center of the city and from general public view in a large area referred to by the Board of State Harbor Commissioners as the industrial lands. While these were expensive, important, modern facilities, their decoration would not have had the same public relations benefit as the piers along the Embarcadero.

From Architecture to Advertising and Public Relations

By the early 1920s, with the architectural program in place, the Board of State Harbor Commissioners began to expand its efforts at business promotion and public relations beyond architecture. During the biennium of 1918-1920, the port created a new position for a "business solicitor" to advertise for new business (BSHC 1921:13). During the biennium of 1920-1922, the port hired a commercial agent and advertising director. In that period, pamphlets were created, a motion picture commissioned, a history of the port was prepared, and exhibits were

displayed at the State Fair, the Fresno County Fair, and the California Industrial Exposition (BSHC 1923:23, 25). From this time forward, advertising and public relations would take an increasing share of the port's budget. After World War II, when the primary task of the engineering department was remodeling existing spaces, the port's efforts at creating a positive image for itself were entirely through advertising and public relations.

The Chief Engineer and the Engineering Department

Except for the Ferry Building and a small office building on the bulkhead wharf, all buildings and structures of the Board of State Harbor Commissioners were designed by the Chief Engineer and his staff in the board's own engineering department. There is no evidence in the Biennial Reports or in the drawings that architects or other consultants were ever hired to design or supervise construction of the buildings and structures at the port (the possible influence of the State Architect is discussed in the previous section). The principal historian of the port through 1930 commented in relation to all the jobs at the Harbor Commission: "Perhaps the most difficult and constructive has been the office of the Chief Engineer" (Voget 1943:178). The Chief Engineer was responsible for overseeing the design, construction, and maintenance of the port's facilities — principally the seawall and the wharves and piers, and for hiring and managing a staff. Since 1908, when the earliest of those wharves and piers that still survive were first built, the staff has included at least 15 engineers (and two architects, discussed below) in positions of responsibility for design and supervision of construction. Most of these individuals were involved in work on several structures. While it seems likely that they specialized in particular aspects of the work — piers, for example, involved three elements, the piers themselves, transit sheds, and bulkhead buildings — the presence of multiple signatures on drawings makes it difficult to know who were the principal designers and who reviewed the drawings. Because little is known about most of those who actually did the work — whose job titles were "assistant engineer" and "draughtsman" — the role of the engineering department is best understood through the office of the Chief Engineer.

The First Engineers

For the first few years after the Board of State Harbor Commissioners was established in 1863, it was concerned with legal and financial matters. Because there was no work for engineers to do,

none were on the staff. Following a competition for the design of the first seawall in 1866, one of the members of the winning team, William J. Lewis, was appointed Superintendent and Constructing Engineer for the seawall. In addition, a consulting civil engineer, Thaddeus R. Brooks, was hired to survey the soil conditions along the waterfront.

The Engineer of Seawall: T. J. Arnold

For several years the only work undertaken by the Harbor Commissioners was the seawall. The engineer responsible for overseeing construction of the seawall was the only engineer on the staff, William J. Lewis. He was paid not out of general funds but out of a separate seawall account, as if the engineer's function was temporary. On 17 May 1870, T. J. Arnold succeeded Lewis and was given the title "Engineer of Sea Wall." Arnold appears to have been the principal initial designer of the second seawall, in the context of a conceptual plan for the port as it was built and as it exists in the district in 2002, including the alignment of the seawall, the bulkhead wharf, and the series of piers projecting into the bay from the bulkhead wharf (Voget 1943:222).

The First Chief Engineer: Marsden Manson

According to the Biennial Report of 1875-1877, there was no longer an Engineer of Sea Wall but a Chief Engineer and an Assistant to the Chief Engineer. The new title reflected the broadening responsibilities of the Board of State Harbor Commissioners for engineering work, notably the design, maintenance and repair of wharves and piers in addition to the seawall. By the biennium of 1882 to 1884, Marsden Manson served as Chief Engineer. Manson was a well-regarded civil engineer who subsequently served as San Francisco City Engineer (1908-1912), in which role he helped design the Hetch Hetchy water system. During his tenure, Manson oversaw construction of several sections of the seawall. In addition to Manson, several other engineers were hired as consultants to advise on matters pertaining to the seawall in 1881 and 1882.

Howard C. Holmes: The Ferry Building and a Patented Pile Design

In 1892, Manson was succeeded by Howard C. Holmes. Holmes represented the Harbor Commissioners during the construction of the Ferry Building. He built the seawall under the Ferry Building and appears to have designed the notable foundations of the Ferry Building as well (Myers 1977:7; Olmsted 1998:17). Holmes was the first of the Chief Engineers for the Board of State Harbor Commissioners who was reported to have made a professional visit to the

facilities of other ports. In the biennium of 1896-1898, he visited the ports of New York, Boston, and Philadelphia "for the purpose of investigating their methods of . . . wharf and dock building generally, the methods of ferry slip construction, the question of timber and pile preservation, and of seawall and harbor embankment construction" (BSHC 1896-1898:53). Holmes and his assistant, Carl Uhlig, patented a design for concrete-jacketed timber piles that proved highly successful. Holmes resigned from his position in 1901 in order to pursue business opportunities associated with this patent. A lawsuit against the Harbor Commissioners over rights to the patent was settled in Holmes' favor during the biennium 1904-1906 (BSHC 1904-1906:64).

Lott D. Norton: A Revised Seawall Design

In 1901, Holmes was succeeded as Chief Engineer by Lott D. Norton. Norton was one of at least three chief engineers with strong connections to the Southern Pacific Railroad Company. Apart from a brief period of study at Hesperian College in Woodland, Norton's entire education and experience in engineering was as a railroad employee. In 1878, "he joined a surveying party engaged in the construction of rail lines for the Old Central Pacific. . . . He remained with the Central Pacific three years and then joined the Southern Pacific as assistant engineer in charge of railroad line construction" (McCarthy 1926). After working thirty years for Southern Pacific, he served as Chief Engineer for the Board of State Harbor Commissioners from 1901 to 1907, "when he returned to railroad surveying" (McCarthy 1926). During Norton's tenure, the Harbor Commissioners adopted a new design for the seawall and built San Francisco's first reinforced concrete piers. The concrete in these piers was of poor quality and the piers deteriorated as quickly as wood piers.

Reorganization: The Assistant State Engineer Replaces the Chief Engineer

On 1 January 1908, the power to appoint the Chief Engineer was taken out of the control of the Board of State Harbor Commissioners and moved to the newly established State Department of Engineering. The head of the Department of Engineering, the State Engineer, was appointed by the governor. The State Engineer, in turn, appointed two Assistant State Engineers, one of whom occupied the position of the Chief Engineer of the Board of State Harbor Commissioners. The effect of this reorganization was to place the Chief Engineer — now called the Assistant

State Engineer — closer to the governor. The law that created this reorganization was signed by the recently elected governor, James N. Gillette, "the railroad's candidate" (Rawls and Bean 1998:255) in March 1907. Together with the Southern Pacific–controlled legislature, this created new possibilities for patronage.

Ralph Barker: Permanent Reinforced Concrete Structures and a Professional Staff

Ralph Barker, who succeeded Norton on 1 June 1907, became the first Assistant State Engineer under this new arrangement on 1 June 1908. Barker studied at the University of California but did not graduate (class of 1903). He served until May 1911 when he was fired: "Inefficiency, Not Graft, In Assistant Engineer's Office, Is Verdict" (*San Francisco Call* 1911). While he was "exonerated of all suspicion of graft" according to a newspaper account, his "inefficiency" in failing "to take proper soundings in the vicinity of Pier 54" ultimately cost the Board of State Harbor Commissioners $18,000. Barker's staff failed to identify a substantial hazard — Mission Rock — "that should have been removed before the pier was built" (*San Francisco Call* 1911).

Notwithstanding the circumstances under which he departed, substantial advances were made during Barker's tenure. He oversaw the design and construction of the first professionally built reinforced-concrete piers (Piers 40, 36, and 38), stronger seawall sections, and the beginning of a program for reconstruction of the bulkhead wharf. In 1907, his staff, consisted of Carl Uhlig, Assistant Engineer, C. H. Kleugel, Engineer's Draftsman; and F. D. Norton, Transitman and Rodman.

In 1909, Henry J. Brunnier joined the staff (*Architect and Engineer* 1930). Brunnier was an engineering graduate of Iowa State College in 1904. According to two biographical sketches, Brunnier, in his position as Draftsman, "designed the first concrete piers and seawalls for the San Francisco Harbor Commission" (Millard 1924:179; also *Architect and Engineer* 1930). The plans for the first piers of an improved design (Piers 38 and 40) were complete and construction was underway before Brunnier was hired. However, Brunnier's signature appears on the 1909 plans for the steel and concrete portions of Pier 36, including the substructure, the hoisting tower, and the inshore section of the transit shed. The redesigned seawall with a reinforced concrete wall, whose construction lasted from December 1909 to March 1910, was built while Brunnier was at the Harbor Commission and appears to have been designed by him. After leaving the

Harbor Commission, Brunnier established a long and successful private practice in which he became one of the most prominent engineers in California. Among the different aspects of his work, he designed harbor and port structures throughout California and in Hawaii; he designed concrete ships during World War I; he designed the structural frames of many of the tallest and best-known buildings in San Francisco, including the Russ Building, the Shell Building, and the Hunter-Dulin Building; he was involved in bridge design including the Bay Bridge and a Humboldt County bridge with "the largest concrete girder span in the world" (Millard 1924:180).

Nathaniel Ellery, State Engineer

Nathaniel Ellery of Eureka, the first State Engineer, was appointed by Governor Gillette to a four-year term in 1907 (California Secretary of State 1907:68).

Under the reorganized engineering staff of the Board of State Harbor Commissioners, the Assistant State Engineer for the port was appointed by and worked for the State Engineer, who also signed the engineering drawings for port structures. Apart from his signature of approval, there is no evidence that the State Engineer played an active role at the port, except in the case of one building — a small office building on the bulkhead wharf. This building, designed by Nathaniel Ellery, State Engineer, in 1909 was moved from the foot of Washington Street "to the bulkhead wharf between Piers 27 and 29" for use by the Belt Railroad in 1919 (BSHC 1921:41). It is now known as Pier 29 Annex.

Carl Uhlig: Interim Assistant State Engineer

After Ralph Barker was fired, Carl Uhlig, his assistant, served in his place on an interim basis. Uhlig had been Howard Holmes' partner in the development of the patented design for concrete-jacketed piles that led to Holmes' resignation. Uhlig was a German immigrant who "assisted in building, tearing away and reconstructing the San Francisco water front improvements for forty-two years." At the time of his death in 1919, he was "the oldest active engineer known on the Pacific Coast. Different political parties have come and gone at Sacramento and there have been scores of changes in the personnel of the Harbor Commissions, but Uhlig remained in his position. When the new officials reported for work and appointed a new Chief Engineer, it was always Uhlig who could tell of the details of the work . . .. Uhlig was as necessary to the Harbor

Board as the Ferry building, and was more dependable than the big clock" (*San Francisco Chronicle* 1919a).

Augustus V. Saph: Purging the Southern Pacific, Expanding the Staff, and Building Permanently

Barker's permanent replacement, the first appointed during the administration of the Progressive reform governor, Hiram W. Johnson, was Augustus V. Saph. Saph served only from May 1911 to August 1912, when he was fired.

During Saph's tenure, the role of the engineering department and its Chief Engineer was undergoing redefinition. Saph was hired at a legally limited salary of $3,000 per year, considered "ridiculously low" (BSHC 1913:17). Efforts to raise the salary were associated with efforts to professionalize the workforce throughout the Harbor Commission staff. Civil service rules were proposed. Many employees considered beholden to Southern Pacific were fired. The staff of the Engineering Department was increased substantially: "more assistants, draughtsmen and inspectors were demanded to prepare the plans and specifications and supervise the work of building the many new and additional piers, wharves, seawall, and other constructions . . . more mechanics and laborers of various classes were employed to keep up and maintain the old and decaying piers . . . The force of electricians has been increased from five to nine, due to large additions to the system" (BSHC 1913:27).

Among the changes, the number of engineering draftsmen increased from two in 1909 to twenty by 30 June 1912 (BSHC 1913:27). Among the draftsmen who were hired by Saph were Frank G. White, later the Chief Engineer, Alfred W. Nordwell, A. C. Griewank, Oliver W. Jones, and Charles Newton Young. Nordwell, a structural engineering graduate of the University of California in 1907, remained with the Harbor Commission until 1951. Griewank, who studied in the University of California Extension, left for a private engineering and real estate practice in which he developed industrial structures with architectural finishes. Before coming to the Harbor Commission, Young worked for the Bay City Water Company and the Associated Oil Company. He remained with the Harbor Commission until 1922. Jones was a 1907 structural engineering graduate of the University of California. He worked for the Board of State Harbor Commissioners until at least 1923 and practiced as an engineer until the early 1950s. White may

have been in charge of the design for Pier 17. Young, Nordwell, and Griewank designed different aspects of Piers 26, 28, and 30-32.

Although he served for only a short time, Saph oversaw the design and construction of Pier 17 and the design and part of the construction of Piers 26, 28, and 30-32. All of these were fireproof, concrete piers. Piers 26, 28, and 30-32 were the first in San Francisco with decorated fronts.

Despite the anti-patronage reputation of the Progressives, the *San Francisco Call* accused the Board of State Harbor Commissioners, which the newspaper called the Johnson board (for Governor Johnson), of reorganizing the engineering staff and firing Saph in order to create patronage positions (*San Francisco Call* 1912c).

Jerome Newman: Restoration of the Chief Engineer, Expansion of the Port, the First Architect
While the *Call* was critical of Saph's firing, it acknowledged the professional qualifications of his successor, Jerome Newman. Newman was an 1883 graduate of the University of California. He came to the Harbor Commission from Southern Pacific where he was "first assistant under Chief Engineer Hood" (*San Francisco Call* 1912d). Whatever Newman's qualifications, the fact that he came from a job with the Southern Pacific Railroad contradicted the assertions of the Harbor Commissioners that they had cleaned out the influence of Southern Pacific.

The position continued to change under Newman. He was hired at a salary of $3,000 per year, but received a substantial increase to $5,000 per year (*San Francisco Examiner* 1916a). In 1915, his title was changed back to Chief Engineer, although he was still appointed by the State Engineer (Voget 1943:182).

In January 1916, an article in the *San Francisco Chronicle* summarized his accomplishments in three years on the job. He "designed and superintended the building of fifteen new piers, four passenger ferry slips and two car ferry slips. Under his direction the ferry post office, belt railroad engine house, Ferry Building extension, the connection of the Belt Railroad at the foot of Market Street and the extension to the United States Transport docks via the Fort Mason tunnel have also been completed. Extensive repairs have been made to piers which had

deteriorated . . . The chief engineer's responsibilities are large and varied" (*San Francisco Chronicle* 1916).

Among the new staff members during Newman's tenure were Alfred A. Pyle and G. A. Wood. Pyle was the first of only two employees of the engineering staff who was also an architect. In 1911, before coming to the Harbor Commission, he was a draftsman for Willis Polk & Company, one of the leading architectural firms in San Francisco. In 1920, he left the Harbor Commission to work for San Francisco architect B. J. Joseph. Before his death in 1936, like many architects during the depression, Pyle found work outside of architecture — as a salesman (*San Francisco Chronicle* 1936, SFD*)* Pyle designed the 1915 Post Office (later the Agriculture Building), Pier 22½ (the firehouse), and the bulkhead buildings at Piers 29, 31, and 3. Galen A. Wood was a draftsman for the Harbor Commission until about 1933. By 1935, he had been promoted to harbor engineer. He retired from the Board of State Harbor Commissioners in 1951 (*San Francisco Chronicle* 1967, SFD).

In June 1916, Newman was fired for failing to show up when a pier caught fire.

Frank G. White: Chief Engineer from 1916 to 1948

In July 1916, Frank G. White, an assistant to Jerome Newman, was appointed Chief Engineer. Frank G. White (1878-1967) "graduated from the University of Iowa in 1889 with a B.S. in Civil Engineering. He was engaged in railroad and municipal engineering for a time in Iowa and Illinois, and then attended the College of Engineering at Columbia University. There was a period of nine years of municipal engineering in Salt Lake City and San Francisco before he joined the staff of the Harbor Commissioners in 1911." (BSHC 1948b:n.p.). After the relatively short terms of most of his predecessors, White served as Chief Engineer for 32 years, retiring in 1948. During his tenure, the structure of the job continued to change. In 1921, the State Department of Engineering whose chief, the State Engineer, appointed the Chief Engineer of the Board of Sate Harbor Commissioners, became the Department of Public Works. In 1931, the connection with the Department of Public Works was ended. After that time the Chief Engineer was appointed directly by the Board of State Harbor Commissioners.

White's tenure was marked by steady progress in the development of well-built port facilities and by an absence of scandal in his office. White was active in professional organizations, notably the Pacific Coast Association of Port Authorities and the American Association of Port Authorities, in association with whose annual meetings he visited many other ports. In August 1917, he made a seven-week trip to "the principal ports of the United States and Canada . . . the most important ports on the Pacific and Atlantic coasts as well as on the Great Lakes and the Gulf of Mexico." In February 1918, he visited "Seattle to investigate and report concerning the importation and handling of Oriental vegetable oils" (BSHC 1919:49-50). In the biennium of 1920-1922 he visited "Baltimore, Philadelphia, New York, Boston, and New Orleans in order to inspect and study the recent harbor development" (BSHC 1923:41). In the biennium of 1928-1930 he visited the ports of Chicago, Toronto, Montreal, and New York (BSHC 1931:24). In the biennium of 1932-1934 he visited the ports of Chicago, Vancouver, and Seattle (BSHC [1934]:21). He was president of the association when it met in San Francisco in 1936.

In 1936, when White had been with the Harbor Commission for 25 years and chief engineer for 20 years, he summarized his accomplishments:

> The construction of 26 piers of which 17 are of reinforced concrete; the construction of the State Terminal building and the installation therein of the refrigeration terminal; the reclamation of 25 acres of submerged land at Islais Creek and the construction of the grain terminal and lumber wharves; the completion of the seawall from Jones Street to Channel Street by the construction of the section between Mission and Harrison Streets; the construction of more than two-thirds of the reinforced concrete bulkhead wharf which now extends from Powell Street to Third and Channel Streets; the construction of the Belt Railroad along the Embarcadero from Spear Street to Broadway to connect the two isolated sections and the extension through the Ft. Mason tunnel to the U.S. Army transport docks and the Presidio; the construction of two car ferry slips and five automobile and passenger ferry slips; the construction of the Embarcadero subway, the Ferry Building viaduct, the Belt Railroad roundhouse and shops, and the south annex to the Ferry Building. (BSHC 1938:57)

Although he continued to serve as chief engineer until his retirement in 1948, only a few more major structures were built after 1936. When he died in 1967, the *San Francisco Chronicle* said

"he had much to do with modernizing and developing the Port of San Francisco" (*San Francisco Chronicle* 1967:57).

Among the staff hired by White were Harry E. Squire, later Chief Engineer, H. B. Fisher, and Arthur D. Janssen. Harold B. Fisher attended the University of California from 1908 to 1911, but did not graduate. According to his obituary, after serving in World War I he "held numerous engineering assignments until he joined the California Highway Department. He worked as a surveyor on the first highway project in the state, the San Juan Grade, and later worked with the State Harbor Commission where he designed and inspected many of the facilities of San Francisco Harbor. At the time of his retirement in 1957, he was Associate Harbor Engineer, and held a license as a civil engineer" (*Alameda Times Star* 1966). Janssen, designer of the bulkhead building for Pier 5 in 1920, was only the second employee of the Board of State Harbor Commissioners until the 1950s known to have been an architect. Nothing is known about his training. He was granted an architectural license from the State of California in 1928 — at least two years after he had left the Harbor Commission. At that time he was listed in the Oakland city directory as a draftsman for the prominent Oakland architect C. W. McCall. Janssen was listed as an architect in Oakland until 1938. The two staff members hired by White along with Griewank, Jones, Pyle, Nordwell, and Wood, all hired by White's predecessor, Jerome Newman, designed and built the majority of wharves and piers still standing along the waterfront in 2002.

Harry E. Squire

White was succeeded as chief engineer by his long-time assistant, Harry E. Squire, who White hired in 1917. Squire was a 1906 engineering graduate of the University of California. Before he came to the Board of State Harbor Commissioners, he worked on the Mare Island dry dock, on harbor facilities at Puget Sound, and for the San Francisco Bridge Company (*Pacific Marine Review* 1949:84). During his years at the San Francisco Bridge Company, from 1914 to 1917, the company was engaged in several projects for the Board of State Harbor Commissioners, including construction of Piers 15 and 41, construction and reconstruction of slips adjacent to the Ferry Building, construction of the foundation for an extension to the Ferry Building, construction of Pier 18 with its shed and bulkhead building, and repair of Pier 21 (BSHC 1916:78-110). Squire was assistant to White during an extended period of active development of

the port from 1917 to 1949. As chief engineer from 1949 until his retirement in 1952, little was built at the port.

Sidney S. Gorman

Squire was succeeded for the rest of the 1950s by Sidney S. Gorman. Gorman graduated from the University of California in civil engineering in 1920. "He was engaged in private practice of several years, following which he was employed by the State of California on the construction of the San Francisco-Oakland Bay Bridge, and later as Chief Construction Engineer, Golden Gate International Exposition, Treasure Island. He then became principal construction engineer for the Signal Oil Company, Los Angeles, and from 1941 to 1943 was assistant chief engineer for the Bethlehem Steel Co. in the construction of a Navy shipyard and Maritime Commission shipyard." (BSHC 1948d:7). Gorman was Principal Civilian Engineer, Public Works Department, San Francisco Naval Shipyard, Hunters Point when he was hired by the Board of State Harbor Commissioners in 1949. Sketches of the Engineering Department during Gorman's years stressed its great variety of work. Responsible for "a city within a city," Engineering Department tasks included maintenance, construction, dredging, "work usually done by the Department of Public Works, the P.G. & E. and the Water Department" (Quan 1957a:4). In this period, an Architectural and Design Section of the Engineering Department included architects, civil engineers, and structural engineers (Quan 1957c:6).

PERIOD OF SIGNIFICANCE

Government — 1878-1946. Under criterion A, the district is significant in the area of Government, for its association with the Board of State Harbor Commissioners. The Board of State Harbor Commissioners was established in 1863 and was superceded by the San Francisco Port Commission in 1969. The Board of State Harbor Commissioners occupied offices nearby until 1899 when it moved into the Ferry Building within the boundaries of the district. As the agency responsible for building and administering the port, the Board of State Harbor Commissioners played a central role throughout its existence. The period of significance in this area begins in 1878 when construction began on the seawall, the earliest of the physical features of the district. The district is significant until 1946 when the role of the Board of State Harbor Commissioners was diminished by the substantial decline in activity of the port.

Commerce — 1878-1946. Under criterion A, the district is significant in the area of commerce, for its role in the economic development of San Francisco and the State of California. The leading nineteenth-century port on the Pacific Coast beginning in 1849, and ranked second to New York for the first half of the twentieth century in the value of its cargo, the Port of San Francisco was significant from 1849 to 1946 or later. The period of significance begins in 1878 when construction began on the seawall — the earliest physical feature in the district. The period of significance ends in 1946 when business at the port declined substantially.

Transportation — 1878-1946. Under criterion A, the district is significant in the area of Transportation, as the focus of local and long-distance transportation in San Francisco, including ships, ferries, railroads, trucks, and street cars. It has had this role since 1849. Despite continuing operations using most forms of transportation and efforts to adapt to new transportation technologies, the significance of the port as a focus of transportation declined substantially with the decline of port business after World War II. The period of significance begins in 1878 when construction began on the seawall. The district is significant until 1946.

Labor — 1934. Under criterion A, the district is significant for its association with the general strike of 1934. The strike lasted for 83 days, from May to July. The period of significance is 1934.

Labor — 1934. Under criterion B, the district is significant for its association with the labor leader Harry Bridges during the Big Strike in 1934. The period of significance is 1934.

Engineering — 1878-1946. Under criterion C, the district is eligible in the area of Engineering, as a rare example of a property type. The features of the port — the seawall, the wharves and piers, and the organization of its elements — embody a once common type of port that was developed for break-bulk cargo handling. Having developed entirely within the period when such ports were found world wide, the port of San Francisco has always reflected this type. The period of significance begins in 1878 when construction began on the seawall, considered the beginning of the permanent port of San Francisco. It includes the year 1898 when the Ferry Building was first occupied and the period from 1908 to 1938 when the wharves and piers that now exist within the district were all built. Because the type is defined not just in terms of its

physical features but also by the way the features were used, the port continued to be significant through the end of World War II when activity at the port declined substantially. The port is significant until 1946.

Architecture — 1898-1903, 1912-1938. Under criterion C, the district is eligible in the area of architecture, as a representative of the City Beautiful Movement. While for much of the history of the port, little or no attention was paid to the appearance of its buildings, this changed with the design of the Ferry Building, which was sufficiently completed to be partially occupied in 1898 and was fully completed in 1903. When the first of the port's modern piers was provided with architectural embellishments of its ends in 1912, this was inspired by the City Beautiful Movement. Most of the piers built between 1912 and 1938 were treated in a similar manner, with most of them stylistically compatible with the Ferry Building. The period of significance includes the period of the completion of the Ferry Building, from 1898 to 1903 and the period of the construction of the embellished piers, from 1912 to 1938.

Community Planning and Development (1878-1938). Under Criterion C, the district is eligible in the area of Community Planning and Development, for its contribution to the shape and character of San Francisco. First, the seawall of 1878 created a permanent, orderly, and attractive waterfront line. The seawall was also the means of creating much new land along the shore. Second, the development of piers and other structures, notably the Ferry Building of 1898 to 1903 and the decorated bulkhead buildings facing the Embarcadero of 1912 to 1938, constituted a major expression of the City Beautiful Movement. The period of significance is 1878-1938, including the years 1878 to 1915 when the seawall was under construction and the years 1912 to 1938 when the decorated bulkhead buildings and pier facades were built.

INTEGRITY

SUMMARY

The Port of San Francisco Embarcadero Historic District, which possesses significance under criteria A, B, and C in the areas of Government, Commerce, Transportation, Labor, Engineering, and Architecture, also possesses integrity, as discussed below. Because it possesses significance and integrity, it is eligible for the National Register of Historic Places.

Integrity "is the ability of a property to convey its significance," (United States Department of the Interior 1991:44). Based on this definition, the Port of San Francisco Embarcadero Historic District possesses integrity. "Ultimately, the question of integrity is answered by whether or not the property retains the *identity* for which it is significant." (United States Department of the Interior 1991:45)Again based on this definition, the Port of San Francisco Embarcadero Historic District is strongly identifiable as the port of San Francisco, both from the water side and from the Embarcadero side. The integrity of the district is strengthened when considered from the perspective of other comparable ports. Whereas during the period of significance San Francisco could be compared to half a dozen United States ports, today only San Francisco's remains. The others have all been abandoned or replaced by container facilities.

As measured by the seven aspects of integrity, discussed below, the port retains a substantial degree of integrity in all aspects despite numerous losses and changes. The district has suffered a substantial diminishing of its integrity of Design through the loss of many piers and the Belt Railroad but this is mitigated to a degree by the presence of integrity in their aspects, perhaps mostly integrity of Feeling.

INTRODUCTION

Before assessing integrity in relation to the seven aspects of integrity, a few common reference points must be established.

The essential physical features of the district include a variety of types of features, some of them more important in some areas of significance than in others. The seawall is essential to the district in every area insofar as it is the foundation of the physical plan of the whole as well as of the bulkhead wharf and the individual piers. Perhaps it is most important to the district in the areas of Engineering and Government. The bulkhead wharf and the piers with their transit sheds and bulkhead buildings are the basic working places of the port, and as such, they are important in all areas. In addition, most of the piers, with their decorated inshore and outshore ends, are especially important in the area of Architecture.

The major buildings in the district are important for different reasons. Pier 22½, the Fire Boat House, is important in the same areas as the wharves and piers. It is especially important when

considering the port in the area of Engineering as a Type. The Ferry Building and the Agriculture Building are important in all areas, but perhaps least of all in the area of Labor and in association with Harry Bridges. Pier 29 Annex, formerly the Belt Railroad office, is important in all areas. The pile driving rigs and the small wood restaurants are particularly important in considering the port as a Type.

The features of the district are generally visible, some more from the water than the land. The seawall and bulkhead wharf are not directly visible from the land but they can be seen in several places from the water. At the same time, the bulkhead wharf provides the structure for the walking surfaces between the bulkhead buildings. Indirectly, the presence of the seawall and the bulkhead wharf are easily visible in the curving line of the waterfront. The interiors of many of the pier buildings and other buildings are visible but generally not open to the public.

During the period of significance, U.S. ports were in an unofficial competition for business whose results were published annually along with rankings in various categories by the U.S. Army Corps of Engineers. During the nineteenth century, San Francisco was the largest port on the west coast. In the twentieth century it was ranked second to New York in the value of its cargo for many years. The principal ports with which San Francisco competed were New York, Boston, Philadelphia, Baltimore, New Orleans, Seattle, and Los Angeles. In very important ways these were all examples of the same type of port. All were established to accommodate break-bulk cargo by skilled waterfront workers. Because of this and because the sizes of ships, the value of cargo, and the requirements of merchants and ship owners were the same in all these places, the ports were developed in very similar ways and tended to have similar facilities and to be similar in appearance.

Differences in geography and port administration accounted for much in the variety of appearances. New Orleans, for example, was located on a river and built wharves along the shore rather than piers projecting from it. New York and San Francisco looked the most alike because each developed its port along a continuously curving waterfront.

All of these ports remained similar as each accommodated changes in the sizes of ships and in the technology of cargo handling until the 1960s. At that time, in a surprisingly short period,

shipping in all of these ports was transformed by a revolution in cargo handling caused by the adoption of container shipping. Containers and the increasingly large ships that carried them required different types of facilities and in some cases completely different locations. The old break-bulk ports were abandoned for the establishment of facilities elsewhere or they were demolished for replacement by new facilities at the same site. All of these old break-bulk ports have largely or completely disappeared except in San Francisco. New York's much larger but similar port facilities have disappeared except for a few fragments, as the port's business moved to Brooklyn and New Jersey. San Francisco's facilities survived, perhaps because of its long control by a single public agency — the Board of State Harbor Commissioners. Only San Francisco and New Orleans were under single control among U.S. ports.

Location

The district possesses integrity of location. It remains in the same location in which it was built.

One of its existing features, a building on the bulkhead wharf, now called Pier 29 Annex, was built in 1909 and moved about nine blocks to the north on the bulkhead wharf in 1919. Both locations are within the district boundaries. Built by the Board of State Harbor Commissioners as one of a pair of small office buildings for shipping companies at the Washington Street pier, it was moved by the Board of State Harbor Commissioners ten years later to serve as the office for the Belt Railroad. In view of the fact that the port was in a constant state of construction and reconstruction and that other small buildings were moved by the Board of State Harbor Commissioners within the boundaries of the future historic district, as is evident in historic photographs, the moving of this structure can be seen as part of the normal operation and development of the port.

Because the dates and circumstances of construction of several other small buildings on the waterfront (three restaurants: the Pier 28½ Restaurant, Java House, and Red's Java House) cannot be ascertained, it cannot be ruled out that any or all of them were also moved.

All of the buildings that were moved or that might have been moved, appear to have been moved entirely within the boundaries of the district. If their original location was within the district and

their current location is within the district, then they have always been within the district and their integrity of location is intact.

Design

Integrity of Design is defined as "the combination of elements that create the form, plan, space, structure, and style of a property" (United States Department of the Interior 1991:44). At the port of San Francisco, integrity of design can be measured in several ways, considering design from the perspectives of engineering, architecture, and adaptation.

First of all, what were the intentions of the designers of the port? The fundamental design of the port was created along with the design of the second seawall in the 1870s. The second seawall established a curving shoreline, from which would project a series of narrow piers. As the seawall was extended, the number of piers increased. The earliest plans were schematic. The precise locations of piers were determined as sections of the seawall were completed. The lengths and widths of the piers were based on the size of ships and the cargo handling technology that existed at the time the pier was needed, and on the location of the federally created pierhead line. Thus, while the design concept for the port dated to the 1870s, the precise design was continuously in flux.

Over the years other features were added to the design of the waterfront, notably the Ferry Building, the Post Office (Agriculture Building), a fire station (Pier 22½), the Belt Railroad Office (Pier 29 Annex), bulkhead connector buildings, and small restaurants. At the time the physical features of the district were completed, a map of the waterfront in 1940 showed 39 piers in the district and 51 resources altogether. Today, there are 23 piers in various states of alteration or decay and 35 resources altogether. The piers which remain maintain the design relationships of the piers to the seawall and the bulkhead wharf, and in many cases of the piers to each other. Historically, the piers have been viewed both from the Bay and from the Embarcadero and it is important to note that the district exhibits different but equally significant characters from these two perspectives. The presence of the Ferry Building and other non-piers along the waterfront provide a nearly complete mix of waterfront building types that existed during the period of significance. The features provide a visual anchor for the piers that remain.

Viewed as a whole, there are substantially fewer piers today than in 1940. Although the original design of the port is clearly evident in those features that remain, the loss of piers substantially detracts from the integrity of design.

At an individual scale, the features of the port also retain varying degrees of integrity of design. Among the piers, the principal engineering features are well represented in many cases, including substructures, aprons, rail spurs, transit sheds, and bulkhead buildings. Both the structures and principal spaces of these piers remain intact in enough examples that integrity of design exists at the port. Where alterations have been made, in many cases they consist of reversible modifications like partitions inside the transit sheds. The original finishes of some bulkhead building interiors, the types of spaces that are often remodeled, remain.

Among non-piers, the exteriors generally retain integrity of design and in most building types, integrity is represented. The most pristine building on the waterfront is Pier 22½, the Fire Boat House, whose interior and exterior are extraordinarily well maintained. The Ferry Building is undergoing a thorough renovation to the Secretary of the Interior's standards.

The most difficult places to assess integrity of design is in places where changes have been made not to meet engineering needs, but to make adaptations for the needs of office workers, restaurant operators and patrons, and waterfront laborers. These changes are rarely well documented on drawings or in other records. Although often superficial and ephemeral, knowledge of these kinds of design issues may be extremely valuable in reflecting social conditions, such as working conditions of longshoremen and other laborers. Design integrity of this sort is evident, for example, in the Agriculture Building, which retains some of its interior finishes. Three of the restaurants — the Java House, Red's Java House, and Pier 23 — retain some interior finishes. Despite efforts to identify features in the transit sheds that may have been added for the use of longshoremen, few could be found, apart from several toilet rooms that date to the 1930s. Additional inspection and research may identify spaces in transit sheds and bulkhead buildings that served as lunch rooms, locker rooms, or other purposes for waterfront laborers.

Integrity of design is also measured in the presence of architectural embellishments. Between 1912 and 1938, most piers were provided with embellished facades at both the inshore and outshore ends. To the extent that the piers still survive, they are little changed. The principal changes are the loss of the cornice at Pier 35 and the simplification of the parapet at Pier 26. In addition to these, most of the piers that have been demolished had embellished facades. Among these was the bulkhead building in front of Pier 40.

Setting

Integrity of setting is measured both externally and internally. Externally, the setting of the district has a land side and a water side. The water side is not changed at all, except in the different types and diminished numbers of vessels in the water.

The land side on the other hand has changed in almost every way. As the port was developed in the twentieth century, the seawall was the inside edge of the piers, wharves, and bulkhead buildings — all the features that are a part of the historic district. On the land side of the seawall new land was created by fill in an irregular area of varying width. At a minimum this new land accommodated a 200-foot-wide thoroughfare, called the Embarcadero. The Embarcadero was a working space typically full of waiting and turning vehicles and the Belt Railroad. Beyond the Embarcadero was an irregular collection of seawall lots which were owned by the port and used or leased for railyards, storage, and parking. This land side of the port began to change with the initial construction of the Embarcadero Freeway in the 1950s. Since the Embarcadero Freeway was demolished in 1991-1992, the Embarcadero's function and image have changed. Today, the Embarcadero is no longer a working space but an artery for automobile and streetcar traffic and a public open space connecting the city to the waterfront. In the late 1990s, the city began a project to implement the redesign of the Embarcadero. Changes on the east side of Embarcadero, immediately adjacent to the piers, included an expanded sidewalk system and pedestrian boulevard that was named "Herb Caen Way" in honor of the late newspaperman. The roadway was realigned to accommodate both automobile and streetcar traffic. Rail tracks were added to the median for MUNI's F streetcar line, that runs north to Fisherman's Wharf, and its N streetcar line, that runs south to the Giant's baseball stadium and the Caltrain station. New ornamental paving materials and palm trees were added to the median. The redesign of the west

side of the Embarcadero included the addition of an expanded sidewalk system, a series of low retaining walls, pedestrian seating, and palm trees. This work was begun in the late 1990s and was still in progress in 2002. The only characteristic of the old Embarcadero that survives in the new design is the general sense of space across from the piers.

Setting can also be measured internally. The principal loss of setting internally is in the loss of piers.

Materials

The port of San Francisco possesses integrity of materials in those features which remain, and it has lost integrity of materials insofar as it has lost structures since the end of the period of significance. Because two of the principal considerations in the construction of the piers were the resistance of wood piles to marine borers and the resistance of structures to fire, materials are a particularly important aspect of the district.

By their nature, even the most durable chemically treated wood piles were not expected to last more than 30 years in water. Wherever they were used, they were expected to be replaced, often before the life of the structure they supported. Many historic photographs show new wood piles being driven through the roofs of transit sheds to replace rotten piles. Thus, integrity of wooden piles is not a matter of original piles, but of routine maintenance and replacement by piles similar to those used before. Most of the wood piles in use today are used for apron structures and as fenders for both wood and concrete pier structures. Wood aprons were used like bumpers — they absorb the impact of ships much better than concrete and are cheaper to replace. Thus, in addition to wood piles, wood aprons were designed with the expectation that they would be replaced.

Beginning in 1908, the port began a campaign to replace its wood piers with permanent structures of concrete. After earlier failed experiments, from that time concrete substructures have proved durable in water. Concrete and steel decks and transit sheds with steel sash and wire glass have been more resistant than wood structures to fire — a recurring danger on the waterfront that destroyed many piers. Many of the modern concrete and steel piers have survived.

Some transit sheds and most bulkhead buildings have been built of heavy timber construction — the transit sheds for Piers 35, 33, 31, 17, and 3, and all the bulkhead buildings except Pier 38 are of heavy timber construction. Although more flammable than concrete, these are similar in character to mill or semi-mill construction (in the San Francisco building code), and are fire resistant. Some of these are clad in wood siding, others in fire resistant stucco. Several of these structures also survive.

Among other types of buildings, the Ferry Building is conspicuous for the survival of its Colusa sandstone walls and the Agriculture Building is notable for the survival of its brick walls. Both of these were also provided with fireproof exteriors.

The small wood-frame, stucco and wood-clad restaurants are distinctive for their appearance of impermanence. These are vulnerable structures, the survival of whose materials is important for the aspects of history they reflect.

Workmanship

Like materials, integrity of workmanship survives to the extent that features of the district survive and it is lost to the extent that features of the district have been lost. That is, the amount of evidence of workmanship has diminished while the character and representativeness of workmanship is still pervasive throughout the district.

For many of the features of the district, workmanship is no more a factor than it is in any industrial construction. Evidence of workmanship is less obvious due to the use of industrial materials and machine tools. While it is less obvious, it is still present and important. Riveted steel and bolted steel frames and concrete formwork have a different meaning than the workmanship of a traditional craftsman because they are produced in a different context. In comparison to more recent industrial structures, the transit sheds at the port, for example, reveal the structure and process of construction — the way modern architects once claimed that architecture should do. A photograph taken of the interior of Pier 36 at the time it was completed in 1910 shows the economy, clarity, and simplicity of construction in that building and raises the question of whether engineers and officials at the time saw it the same way (BSHC 1910:26).

As surviving examples of older building methods, the Ferry Building and the Agriculture Building reflect the work of stone masons and brick masons, respectively.

Feeling

Integrity of feeling is strongly present at the port on those piers where shipping is still active or where passengers are coming and going from ferry boats and cruise ships. Views from the Embarcadero of transit sheds packed with boxes, workers inspecting or moving cargo, forklift tractors in motion, and ships at berth evoke the period of significance in a direct manner. Integrity of feeling is diminished at piers that are no longer used for shipping, and in front of the piers now that the Belt Railroad has been dismantled and the Embarcadero itself has been transformed from a working street to an artery of traffic that is largely unconnected to the traditional business of the port.

Viewed from the water, despite the loss of many piers, the district still feels like a single entity — more so than it does when viewed from the Embarcadero.

Some of the less picturesque and more ephemeral features of the district are particularly important elements of the integrity of feeling. On the one hand, the piers with undecorated fronts — Piers 17, 36 and 40 — are powerful images of the nature of work at the port and of the real function of the port. These structures more clearly reflect the role of labor than the others which are decorated with an image that reflects the interests of the employers and the civic values of the Board of State Harbor Commissioners.

At the same time, the least permanent features of the district, including the wood restaurants on the waterfront, the no smoking signs in the transit sheds, and the pile driving rigs at work along the piers, convey substantial feeling for the period of significance.

Association

Integrity of Association, defined as “the direct link between an important historic event or person and a historic property” (United States Department of the Interior 1991:45), is strongly present in most respects. Generally speaking, integrity of association is present in the district because the

district embodies the various areas of significance. In the areas of Commerce and Engineering, integrity of association is present in the broad features of the district as a whole. In the area of Government, integrity of association is present both in the broad features of the district and in the Ferry Building where the Board of State Harbor Commissioners had its offices. In the area of Architecture, integrity of association is present in the decorated inshore and outshore ends of most of the piers, in the Ferry Building, and in the Agriculture Building. In the area of Transportation, integrity of association is present in the broad features of the district and insofar as working ships and trucks are still present, but it is diminished by the absence of the Belt Railroad. In the area of Labor and in its connection to Harry Bridges, integrity of association is diminished by the loss of substantial elements of the southern waterfront, which was the backdrop for many of the activities of the strike.

BACKGROUND FOR INTEGRITY AND BOUNDARY ISSUES: SITES OF LOST FEATURES AND RELATED FEATURES OUTSIDE THE DISTRICT BOUNDARIES

At the peak of activity of the port of San Francisco during World War II, the Board of State Harbor Commissioners had jurisdiction over a curving corridor of land and water along the waterfront. The outshore edge of this corridor was defined by the harbor lines established by the U.S. Army Corps of Engineers — outside of which piers or other structures could not be built. The inshore edge of this corridor was an irregular, zig zag line along the junction between the seawall lots, made of fill, and the solid ground of the city as it existed in the 1870s (much of which was also made of fill). Within this corridor were the features of the port, from inshore to outshore: seawall lots occupied primarily by railyards and other facilities of the Belt Railroad; the Embarcadero; the seawall and the bulkhead wharf with numerous buildings and structures on the bulkhead wharf; and the piers extending into the bay from the bulkhead wharf to the pier front line.

Since the decline of shipping activity at the port began after World War II (since the end of the period of significance in 1946) many features of the port have been lost due to demolition, destruction by fire, deterioration due to neglect, or redevelopment. The following brief catalog provides information about the principle lost features that have been identified. The sites of some of these lost features are entirely within the boundaries of the district. Others are entirely

or partly outside the boundaries of the district. The material presented in this section completes the history of the facilities of the port associated with the district. In addition, it provides background necessary in the evaluation of the district's integrity and in the justification of the district's boundaries.

The material presented in this section is only to provide information that helps in understanding the features that survive and the history of the district. None of the features presented here are part of the district; all of these features are either outside the district boundaries or have been demolished.

INSHORE FEATURES

Seawall Lots

Many of the seawall lots were broken up for construction of the Embarcadero Freeway in the 1950s. Some railyards were removed at that time. Most of the seawall lots that had not already been converted to parking lots became parking lots at that time, including the area under the freeway. Others were developed for automobile use as gas stations. Especially since the Embarcadero Freeway came down in 1991-1992, many seawall lots have been redeveloped for office, housing, and commercial uses. The Belt Railroad Engine House or roundhouse has been converted to office use.

The Embarcadero

Like the seawall lots, the Embarcadero underwent major changes with construction of the Embarcadero Freeway beginning in the mid 1950s. The vehicular subway built in 1923-1925 to carry motor vehicles under the streetcar lines at the foot of Market Street was removed after 1946 (Olmsted 1998:211). Railspurs were removed and the road became less of a work space and more of a traffic artery. In association with the development of Pier 39, about 1980, the Embarcadero was moved inshore for a distance of up to 100 feet from the north side of Pier 35 to Pier 43½. After 2000, it was realigned inshore between Howard and Harrison streets. Since the Embarcadero Freeway came down, the Embarcadero has been redesigned as the Embarcadero Roadway — an ornamental boulevard with streetcars in the median, a plaza in front of the Ferry

Building (Harry Bridges Plaza), a park at the foot of Folsom Street (Rincon Park), and palm trees along the sides of the roadway.

WATERFRONT FEATURES

Barge Office

A photograph of the recently completed U.S. Customs Barge Office building appeared in the Biennial Report of 1916-1918 (BSHC 1919:45). It was located opposite Shed B of Pier 45 at the outshore edge of Fishermen's Wharf. It was located near the outermost port facilities where custom's officials could monitor and intercept ships entering the bay from foreign destinations. It was a two-story structure in the style of a Mediterranean villa, with smooth stucco walls, a recessed entrance loggia, and a red tile roof. Built almost 15 years before Pier 45, it was closer in appearance to Fisherman's Wharf buildings, which it was near, than it was to other facilities of the port located north of Market Street. Perhaps like the Post Office (later the Agriculture Building), a distinctive style was chosen in part because of its use by the U.S. government. It was still standing in 1949 (Sanborn Map Company 1949:volume 1, p. 64). It was gone by 1975 (Cameron 1975:33).

Pier 35-37 Connecting Wharf and Building

See also Section 2 of the bulkhead wharf (Contributing Resource) and Pier 37 (Lost Feature).

A connecting wharf and building was built within the biennium 1936 to 1938 between Piers 35 and 37. This was a timber frame structure on wood piles. According to the biennial report of 1936 to 1938, "It is irregular in shape but has an average length of 285 feet and an average width of 90 feet . . . The wharf . . . is elevated to truck height above the street." (BSHC [1938]:51, 54) The building is similar in appearance to Pier 24 Annex. It was still standing in 1949 (Sanborn Map Company 1949) and was gone by 1973 (U.S. Geological Survey 1973).

In association with the development of tourist Pier 39 after 1978, this connecting wharf has been resurfaced as a public park called East Wharf Park. (Sanger 2004). East Wharf Park, with its raised wood deck, is different in design from Sidney Rudy Waterfront Park at Pier 37

immediately to the northwest, but the two parks connect by pedestrian paths. Unofficially, this area is referred to as Pier 35½.

Eagle Cafe

See also tourist Pier 39 (Non-Contributing Resource).

The Eagle Cafe, originally a small office building on the inshore side of the Embarcadero (the southeast corner of Powell and Jefferson streets), was built by the 1920s when it housed offices for McCormick Steamship Lines. While still in that location, it was altered for use as a restaurant in the 1930s — the Eagle Restaurant, later the Eagle Cafe. When construction began on the tourist Pier 39 about 1980, the Eagle Cafe was moved again — this time to the upper level of the tourist Pier 39. It is no longer within the boundaries of the district and its setting has been radically altered. It is still in use as a restaurant in its new location. The Eagle Cafe building is a wood frame structure with horizontal siding, a hip roof, and a large “Eagle Cafe” sign on the roof.

Bulkhead Wharf Section 9a

See also Section 9b of the bulkhead wharf (Contributing Resource), Pier 14 – Wells Fargo & Company Express Building (Lost Feature), Launch Offices (Lost Feature), and Piers 16-18-20 (Lost Feature).

Section 9a of the bulkhead wharf was built with the Section 9a seawall under a contract dated 4 January 1913 by Daniel Contracting Company. It was completed 27 November 1914 at a cost of $151,862.62. (BSHC 1916: 82) It was 990 feet long and stretched from “near the foot of Mission Street to the foot of Folsom Street” (BSHC 1914: 32).

The design of Section 9a was the same as Section 9b. It was a reinforced concrete structure that extended sixty feet from the top of the seawall to the water front line, supported by four concrete piles and two concrete encased wood piles at the outshore end.

Pier 14, Pier 16, and Pier 18 were built along Section 9a. Pier 14 was built first as a short pier for the Wells Fargo & Company Express Building in the biennium 1914-1916. Part of the

building rested on the bulkhead wharf. By 1919 the pier was extended further into the bay. It was partly destroyed by fire in 1959. The building was removed by 1975.

Piers 16 and 18 and a bulkhead building between them were completed in the biennium 1914-1916. These piers were removed between 1975 and 1983.

In addition, between Pier 14 and Pier 16, a bulkhead building called the Launch Office was built in 1916 (BSHC 1916: 41). This was removed after 1959 (Olmsted 1998: 166) and before 1975 (Cameron 1975: 62).

The bulkhead wharf itself was partially intact in 1975. At that time Pier 16 still stood along with a portion of the bulkhead wharf. Exposed piles from the bulkhead wharf at Pier 14 and between Pier 14 and Pier 16 were in place, lacking a deck (Cameron 1975: 62). All of the Section 9a of the bulkhead wharf no longer existed by 2001 except for exposed concrete piles visible from Rincon Park in the vicinity of Howard Street.

The setting for Section 9a and Section 9b has also been altered with the realignment of the Embarcadero Roadway inshore as far as Steuart Street between Harrison and Howard streets and the creation of Rincon Park between the new Embarcadero and the new water front (now marked by the seawall), built in phases and completed in 2005.

Launch Offices

See also Section 9a of the bulkhead wharf (Lost Feature).

A photograph of the recently completed Launch Offices building appeared in the Biennial Report of 1914-1916 (BSHC 1916:42). It was located on the bulkhead wharf between the foot of Mission Street and the foot of Howard Street with Pier 14 to the north and Pier 16 to the south. It was a one-story timber frame structure with a two-story tower at each end. It measured 20 by 164 feet and contained storerooms and offices (BSHC 1916:41). Conforming to the pattern for port buildings south of Market Street, it was in the Spanish Colonial Revival Style with smooth stucco walls, decorative frames around entrances, and red tiled roofs. The building was still standing in 1958 (Olmsted 1998:166). It was gone by 1975 (Cameron 1975:62).

Section 9b

See also Piers 16-18-20 Section 8 (Lost Feature), Pier 22 Section 8 (Lost Feature), Fire Station 35 at Pier 22½ (Contributing Resource), Pier 24 Section 8 (Lost Feature), and Section 9a of the bulkhead wharf Section 8 (Lost Feature).

Description

Summary

Section 9b of the bulkhead wharf survives only in one 150 by 60 foot stretch, the rest of the 788 by 60 foot structure having been demolished. The surviving portion supports Fire Station 35 at Pier 22½. This is a concrete, steel, and wood structure with a grid of concrete piles and wood encased in concrete piles surmounted by a deck of steel I-beams, wood timbers, and concrete with an asphalt surface. The original asphalt surface has been replaced. The structure of the surviving portion of Section 9b appears little altered.

Description

Section 9b of the bulkhead wharf survives only on one stretch of about 150 feet north of the foot of Harrison Street at Pier 22½, supporting Fire Station 35. This is a fragment of the full Section 9b bulkhead wharf that was built according to a consistent design from one end to the other, a continuation of the same design in Section 9a.

This part of the bulkhead wharf measures 150 feet along the water front by 60 feet from the top of the seawall to the toe of the seawall at the water front line. The loose seawall is topped by a concrete retaining wall two feet wide at the top, six feet wide at the bottom, and ten feet tall. The bulkhead wharf is a concrete and steel deck on a grid of piles — two thirds of the piles are concrete and one third are wood piles encased in concrete. This grid of piles is tied together parallel to the seawall by fifteen-inch I-beams at the tops of the piles. Perpendicular to the seawall, ten-inch I-beams are each supported by four concrete piles, followed by two wood piles encased in concrete at the outshore end. The edge was originally protected by wood pile fenders. The deck is supported by ten-inch I-beams alternating with eight-by-ten-inch timbers. The original asphalt surface has been replaced by new asphalt. The entire bulkhead wharf was built to an elevation of the City Base.

The setting for Section 9a and Section 9b has also been altered with the realignment of the Embarcadero Roadway inshore as far as Steuart Street between Harrison and Howard streets and the creation of Rincon Park between the new Embarcadero and the new water front (now marked by the seawall), built in phases and completed in 2004.

Construction History

Section 9b of the bulkhead wharf was built with Section 9b of the seawall under a contract dated 4 January 1913 by Daniel Contracting Company. Although begun on the same day as Section 9a, it was completed nearly six months later than Section 9a on 6 May 1915. The cost was $267,775.08. (BSHC 1916: 83).

Section 9a and Section 9b were both designed by Charles Newton Young under the supervision of Jerome Newman, Assistant State Engineer. Although they were different in plan, their structural details were identical.

Section 9b of the bulkhead wharf originally stretched 788 feet along the water front from the foot of Folsom Street to the foot of Harrison Street. Section 9b was built with two legs that meet in an obtuse angle. The northern leg, at the foot of Folsom Street, was 153 feet long. The southern leg was 635 feet long.

Two existing piers were removed for the construction of Section 9b of the bulkhead wharf. Those were wood structures named Pier 14 and Pier 16. Existing wood Pier 12 was shortened at the inshore end. Drawings for Section 9b of the bulkhead wharf dated June 1914 showed the locations of three proposed piers — Pier 20, Pier 22, and Pier 24, all on the south leg. Pier 20 was shown on almost the same location as old Pier 12, built of wood in 1896. The sites of bulkhead buildings attached to Pier 22 and Pier 24 were also shown. In addition, a proposed fire house was shown on the bulkhead wharf between Pier 22 and Pier 24.

Even before the completion of Section 9b of the bulkhead wharf on 6 May 1915, plans for the rapid development of this section of the waterfront were under way. The first development was described by the Board of State Harbor Commissioners as: “A fire house for the use of the San

Francisco fire department, located on the bulkhead wharf between Piers 22 and 24 . . . This building was completed in April 1915" (BSHC 1916: 41).

On 21 January 1915, a contract was signed for construction of Pier 24 together with a transit shed on the pier and a bulkhead building on the bulkhead wharf. This was completed 16 September 1915. (BSHC 1916: 28, 102)

Plans for replacement of old Pier 12 were at least temporarily dropped. Pier 12 was renamed Pier 20. Then on 1 July 1915 a contract was signed for an addition to Pier 20 with a new shed on the pier and a bulkhead building stretching from the inshore end of the pier southward along the bulkhead wharf to Pier 18. This was completed 2 December 1915. (BSHC 1916: 28, 104).

On 19 August 1915, a contract was signed for construction of Pier 22 with a new transit shed on the pier and a bulkhead building on the bulkhead wharf. This was completed 16 March 1916. (BSHC 1916: 28, 104).

About a year and a half after completion of Section 9b of the bulkhead wharf, all of section 9b and the south half of Section 9a were repaired, as reported by the Board of State Harbor Commissioners. This was described as:

> . . . the raising of the bulkhead wharf, between Howard and Harrison streets. On account of the nature of the subgrade upon which the seawall in this locality was constructed, it settled, carrying with it the bulkhead wharf and bulkhead buildings. The greatest settlement occurred at the foot of Folsom Street, and amounted to about four feet. The work of raising the bulkhead wharf extended over a distance of 1,150 feet. The concrete piles were cut off below the deck, the entire deck structure was jacked up to grade, and the piles and bulkhead wall were built up to the necessary height to take the bearing. The work was carried out without interrupting the use of the structure above and was completed in April 1917. (BSHC 1919: 40)

Pier 20 was extended under a contract beginning 26 May 1920 and completed 26 November 1920 (BSHC 1923: 76). Pier 22 was extended under a contract beginning 20 July 1922 and completed 29 March 1923 (BSHC 1924: 42).

During the biennium 1920-1922, the map of the waterfront prepared by the Board of State Harbor Commissioners first showed an L-shaped structure on the bulkhead wharf between Pier 20 and Pier 22. Nothing else is known about this structure.

The bulkhead wharf in Section 9a and Section 9b continued to need repairs:

> Sections 9a and 9b of the seawall were constructed in 1913 and 1914 and extend from a point between Mission and Howard streets to Harrison Street. Although a trench was dredged to a depth of 50 feet below city base, the wall which was of rubble mound construction rested on extremely unstable material. The result has been that there has been continuous settlement of the wall and of the wharves and buildings which were constructed over the outer slope of the wall and supported on reinforced concrete piles. It became necessary to raise the structures in 1917 and again in 1931 in order to relieve severe distortion in the structural members and to reduce the grades of the driveways into the piers. The work was done by bolting clamps to the concrete piles, transferring the load of the deck and buildings to house moving jacks, cutting the connections between the piles and the deck beams, raising the structures to grade, extending the concrete piles and replacing the connections to the beams. At the same time extensive repairs were made to the structures, these being necessitated by deterioration and racking due to the settlement. The raising of the wharf was completed on February 17, 1932. (BSHC [1932]: 21)

All the features present by 1923 appear to have survived through the period of significance. Pier 20 was removed between 1959 and 1983. Pier 22 disappeared between 1962 and 1983. Pier 24 was intact until at least 1985. Between 1985 and 1997, the transit shed and bulkhead building were burned in a fire and demolished, leaving only the pier and bulkhead wharf. An aerial photograph taken 15 August 2001 showed fragments of Pier 24 still present, although not continuously from the bulkhead wharf to the Bay Bridge pier. Bulkhead wharf piles at Pier 24 are also visible in the photograph. Except for Fire Station 35 (at Pier 22½) which is a separate contributing resource, see Section 7 – page ___ still standing on a portion of the bulkhead wharf, the rest of Section 9b of the bulkhead wharf no longer existed by 2001. In 2004, most of the remaining fragments of Pier 24 and the adjacent portion of Section 9b of the bulkhead wharf were removed by the port.

The history of Section 9b of the bulkhead wharf is associated with the history of the piers and the fire station built on and adjacent to it, including operation of the Belt Railroad.

Pier 46B - The State Refrigeration and Products Terminal

See also Pier 46 Section of the bulkhead wharf (Contributing Resource).

Pier 46B was located along the north side of China Basin between the Third Street Bridge and the Embarcadero. As illustrated in the biennial reports of 1918-1920 (BSHC 1921:30, 52) and 1920-1922 (BSHC 1923:14), Pier 46B was first proposed as a massive six-story "warehouse and wharf shed" to be known as China Basin Terminal. The newly completed first two stories of this reinforced concrete structure, intended to be built in phases, were illustrated in the biennial report of 1926-1928 — at that time named the State Products Terminal (BSHC [1928]:14).

Although the additional four floors were never built, expensive work was done to the building in 1929-1930 when "A section of the second floor of the building 100 feet in width and 263 feet in length" at the east end was outfitted as a cold storage plant "for the handling of export shipments of perishable farm products, particularly fresh fruit" (BSHC 1931:19). At that time the building was known as the State Refrigeration and Products Terminal. Later it was also known as the State Cold Storage Plant (BSHC [1938]:18). It was demolished to make way for PacBell Park in the 1990s.

OUTSHORE FEATURES

Pier 43½

See also Section B of the bulkhead wharf (Non-Contributing Resource), Franciscan Restaurant (Non-Contributing Resource), and Pier 43 (Non-Contributing Resource).

Pier 43½ was built in the 1990s to accommodate tourist ferry operations, waterfront access, and a small park at its outshore end. It is also used for parking. It replaces a pier that was part of a complex of wood structures built in 1914, consisting of a bulkhead wharf, two piers, and two car ferry slips. (BSHC 1914: 53) The rebuilt descendants of the two 1914 piers are called Pier 43 and Pier 43½, built in association with Section B of the bulkhead wharf.

Pier 41

See also Section A of the bulkhead wharf (Contributing Resource) and Pier 41½ (Non-Contributing Resource).

Pier 41 (200 by 1,082 feet) was built in 1914 (BSHC 1914:46-47) together with a portion of Section A of the bulkhead wharf. Its bulkhead building which extended along the Embarcadero (353 by 35 feet) was built during the biennium 1918-1920 (BSHC 1921:126). The Neoclassical facade of the bulkhead building with its central arched entry and wings was similar in design to Piers 29, 31, 39, and others.

In association with the development of tourist Pier 39 about 1980, Pier 41 was substantially altered to serve as a fishing pier and for access to the marina on its east side and to tour boats and ferries on its west side. The transit shed and bulkhead building were removed and the deck was redesigned and rebuilt. The new deck is supported on remnants of an earlier pier substructure, according to Port engineers — three parallel alignments of wood piles. The new deck consists of a narrow walkway and wide platforms at intervals. Pier 41 was redesigned together with Pier 41½, a Non-Contributing Resource.

Pier 39

See also tourist Pier 39 (Non-Contributing Resource) and Section 1 of the bulkhead wharf (Contributing Resource).

The predecessor of the Pier 39 tourist pier, also called Pier 39, was begun under a contract dated 29 April 1914 (BSHC 1914:119). It was a reinforced concrete structure with maximum dimensions of 140 by 937 feet. A photograph of the newly completed bulkhead building appeared in the Biennial Report for 1930-1932 (BSHC [1932]:40). The Neoclassical facade, with its central arched entry and wings was similar in design to Piers 29, 31, 41, and others. Pier 39 was still standing in 1973 (U.S. Geological Survey 1973). Its transit shed and bulkhead building were removed before construction began on the Pier 39 tourist pier about 1980. The pier itself remains (Sanger 2004) although it has been expanded and built upon so that it is neither visible nor discernible.

Pier 37

See also Section 1 of the bulkhead wharf (Contributing Resource) and Pier 35-37 Connecting Wharf and Building (Lost Feature).

A contract for construction of Pier 37 was let 29 April 1914. It was a wood structure with maximum dimensions of 201 by 982 feet. The bulkhead building had a Neoclassical facade with a central arched entry and wings (BSHC 1914:34, 123). It was similar in design to Piers 29, 31, 39, 41, and others. It was still standing in 1975 (Cameron 1975:33). It burned down prior to construction of the tourist Pier 39 about 1980.

A projection of the bulkhead wharf where it met Pier 37, or a stub of Pier 37 still marks the location of Pier 37. This has been resurfaced as a park stretching from Pier 37 to Pier 39. A plaque identifies this area as Sidney Rudy Waterfront Park (named for attorney Sidney Rudy, 1912-2005), dedicated 26 February 1981.

Pier 27

See also Section 3 of the bulkhead wharf (Contributing Resource) and Pier 29 Office Building (Non-Contributing Resource).

Pier 27 was built in 1906 (BSHC [1938]:55). Following construction of a new bulkhead wharf, the Pier 27 bulkhead building was built in 1920-1921 (BSHC 1923:22, 31). The bulkhead building had a Neoclassical facade with a central arched entry and wings. With its paired, rusticated pilasters, it was similar in appearance to Pier 9. The outshore end of the pier had an espadaña parapet (BSHC 1948c:6). Plans to demolish Pier 27 (known as the potato wharf) were announced in 1948 (BSHC 1948c:6) — long before its replacement by the new Pier 27 about 1965 (SFAH n.d.).

It is not known when Pier 27 was actually demolished. Also, it is not known if the Pier 27 bulkhead building remained to be remodeled in 1962 as part of an accommodation of the Pacific Far East Line. A port publication described this as: “Remodeling the two-story bulkhead face of Pier 27 (which no longer exists) to provide about 16,000 square feet of modern office space.”

(*Portside News* 1962). On the other hand, 1962 plans for the new building do not show the incorporation of elements from the previous structure.

Pier 25

See also Section 4 of the bulkhead wharf (Contributing Resource), and Pier 23 (Contributing Resource).

Pier 25 was built in 1900 (BSHC [1938]:55). Following construction of a new bulkhead wharf, a new bulkhead building was built across the fronts of Piers 23 and 25 in 1926-1927 (BSHC [1928]:41). This structure had a Neoclassical style facade with two arched entry pavilions flanked by wings. This was demolished in 1930 for a new bulkhead building at Pier 23 that did not extend to Pier 25. Pier 25 was still in use in 1962 (Board of Engineers for Rivers and Harbors 1962:23). Pier 25 was demolished to make way for the new Pier 27 about 1965.

Ferry Slips

See also Section 7 of the bulkhead wharf (Contributing Resource), Section 8a of the bulkhead wharf (Contributing Resource), Section 8b of the bulkhead wharf (Contributing Resource), and Section 8 of the bulkhead wharf (Contributing Resource).

From the time the Ferry Building was first open for public use in 1895 until the Bay Bridge opened in 1936, wood ferry slips were built, repaired, and rebuilt behind the Ferry Building and on the waterfront to the north and south of the Ferry Building. From a maximum of ten ferry slips, by 1949, eight remained (Sanborn Map Company 1949). These were all still present in 1958 (Olmsted 1998:166). Most were removed for construction of the BART tube under the bay in the mid 1960s. By 1975, portions of two slips remained south of the Ferry Building and one north of the Ferry Building (Cameron 1975:62). These were subsequently removed prior to 2001.

Railway Express Company

See also Section 8 of the bulkhead wharf (Contributing Resource).

The Railway Express Company was located on the bulkhead wharf between the Agriculture Building and Pier 14. By 1924, there was a Railway Express Company shed on the dolphin between Slip 9 and Slip 10 behind car ferry facilities and a small ticket building. (Olmsted 1998: 108) When the car ferry facilities were removed (probably after the Bay Bridge opened in 1936), the Railway Express Company built a one-story office building in front of its shed on Section 8 of the bulkhead wharf. (Olmsted 1998: 166) The Railway Express Company buildings were removed sometime between 1958 and 1975.

Pier 14 - Wells Fargo & Company Express Building

See also Section 9a of the bulkhead wharf (Lost Feature).

Pier 14 appears initially to have been a deep bulkhead structure that was subsequently extended further into the bay and designated as a pier. A photograph of the recently completed Wells Fargo & Company Express Building at the inshore end of what would later become Pier 14 appeared in the biennial report of 1914-1916 (BSHC 1916:42). It was a two-story timber frame structure clad in stucco that measured 110 by 430 feet (BSHC 1914:54). Initially built on a deep section of the bulkhead wharf, it was soon extended further into the bay. This addition was "irregular in shape, but . . . approximately 100 feet in width by 270 feet in length" (BSHC 1919:41). Altogether the structure projected 800 feet into the bay — comparable to other piers built in that period. The Wells Fargo building was compatible in color and materials with its south-of-Market Street neighbors — it had a red tile roof and plain stucco walls. However, its Embarcadero facade design mixed a Neoclassical vocabulary like that on north-of-Market Street bulkhead buildings with a composition similar to San Francisco warehouses and commercial buildings. It was divided into three bays defined by an order of paired giant pilasters.

Pier 14 was still standing in late 1958 (Olmsted 1998:166). A fire destroyed part of the structure in 1959 (Quan 1959). In 1975, the building had been removed but most of the 800-foot-long substructure remained. This was subsequently removed prior to 2001.

Piers 16-18-20

See also Section 9a of the bulkhead wharf (Lost Feature) and Section 9b of the bulkhead wharf (Contributing Resource).

Plans for Piers 16 and 18 and a long bulkhead building linking Piers 16, 18, and 20 appeared in the biennial report of 1912-1914 (BSHC 1914:34, 42). Pier 20 (previously Pier 12) was built in 1896 (Ebasco 1959). The new work was completed in the biennium of 1914-1916 (BSHC 1916:46, 48, 99, 100, 104). Piers 16 and 18 were each about 140 by 680 feet. Pier 20 was 122 by 638 feet. The bulkhead building that linked the three — all wood structures — was 313 by 48 feet. The stucco front of the bulkhead building consisted of three Mission Revival style pier fronts with espadaña parapets linked by two-story connectors.

Piers 16, 18, and 20 were all still standing at the time of a 1959 survey of port facilities (Ebasco 1959). A partial photograph of the site in 1975 shows Pier 16 with that portion of the bulkhead building to the north removed and that portion to the south truncated (Cameron 1975:62). By 1983, the piers were gone (SFAH n.d.).

Pier 22

See also Section 9b of the bulkhead wharf (Contributing Resource).

Pier 22 was a wood structure built in 1915-1916. Its dimension were originally 125 by 407 feet. The bulkhead building was 44 by 130 feet (BSHC 1916: 28, 105). The facade of the bulkhead building was almost identical to that of Pier 24, with a smooth stucco wall, a red tile roof, and espadaña parapet over the central arched entry, and a paneled frieze under the eaves. Pier 22 was still standing in 1962 (Board of Engineers for Rivers and Harbors 1962:27). It was gone by 1983 (SFAH n.d.).

Pier 24

See also Section 9b of the bulkhead wharf (Contributing Resource).

Pier 24 was a wood structure built in 1915. Its dimensions were 127 by 800 feet. The bulkhead building was 44 by 130 feet (BSHC 1916:28, 32, 50). The facade of the building was almost identical to that of Pier 22, with a smooth stucco wall, a red tile roof, an espadaña parapet over the central arched entry, and a paneled frieze under the eaves. Pier 24 appeared to be fully intact in 1985 (SFAH n.d.). By 1997 after a fire, the transit shed and bulkhead building were demolished and only the substructure — wood piles and an asphalt paved deck — remained (Hope 1997). By 2001, in addition to reinforced concrete piles from the bulkhead wharf, only wood piles remained of Pier 24. These were demolished by the port in 2004.

Pier 30-32

See also Section 10 of the bulkhead wharf (Contributing Resource), Section 11a of the bulkhead wharf (Contributing Resource), and Red's Java House (Pier 30) Section 8 (Lost Feature).

Description

The substructure at Pier 30-32 was built in four phases. The original substructure, designed in 1912, consisted of two piers and a bulkhead wharf. The substructure is of reinforced concrete including reinforced concrete piles, shown in a photograph in the Biennial Report of 10 July 1912 (BSHC 1913:16). A photograph of 6 June 1913 in the collection of the Port of San Francisco two pile driving rigs, a third derrick, and many workers is labeled "last concrete in deck."

Pier 30 was originally 719.67 feet long, Pier 32 was 807 feet long, and both piers were 200 feet wide. The bulkhead wharf was approximately 627 feet along the Embarcadero and extended 203 feet east of the seawall — an unusually long distance — in order to allow a wide bulkhead building. The reinforced concrete piles and deck of the original structure appear to remain in place. The transit sheds and bulkhead building erected on this substructure were destroyed by fire in 1984.

The two piers were extended according to plans dated 30 December 1926. With the extension, Pier 32 was about 932 feet long, an addition of 125 feet. Pier 30 was extended a similar length.

These are reinforced concrete structures that appear to remain in place. The extension consists of concrete piles, pre-cast pile caps, and paved concrete slab decks.

In 1950, designs were prepared and in 1952 construction was completed to join the two piers by a connecting wharf — a reinforced concrete deck over the slip that originally separated the piers. This deck was depressed three feet six inches below the adjoining piers to create loading docks for trucks and rail cars. Trucks entered the depressed area on inclined ramps at both ends, and rail spurs ran along each side.

The footprints of the long-destroyed transit sheds on Piers 30 and 32 are clearly visible in the paving of the deck. In addition, around the periphery of the deck are cast iron mooring bitts or bollards and wood fender piles. Today, the deck functions as a parking lot.

Red's Java House restaurant, located on the northwest corner of Pier 30-32, is described separately as a Related Feature outside the district boundaries.

History

Pier 30-32 was among the earliest examples of permanent reinforced concrete piers built by the Port of San Francisco. It was the first example of a pair of piers built as a single development. Plans for the substructure, the transit sheds, the bulkhead buildings, and the decorated facades were prepared by Charles Newton Young under the direction of A. V. Saph, Assistant State Engineer, on 14 March 1912. By the end of the biennium on 30 June 1912, "Piers No. 30 and No. 32, were let in one contract to Pacific Wakefield Company for $975,981, as they have a connecting bulkhead wharf; all designed especially to suit the convenience of a large ocean steamship company, which will take both wharves" (BSHC 1913:17).

According to the Biennial Report for 1910-1912:

> Piers Nos. 30 and 32 are to be of reinforced concrete, except the shed, which is to be of timber construction, accommodating the desires of the American Hawaiian Steamship Company, which is to use these piers. The type of construction is practically the same as that used in piers Nos. 36, 38 and 40 since the same hard foundation was found by borings. No tests were made as to the carrying power

> but a unit load of 5 tons per square foot on the soil was allowed as had been done before. A test made for piers 38 and 40 proved that such a foundation will carry 30,000 pounds per square foot without settlement . . .
>
> A deviation from former plans consists in making use of a portion of the space between the two piers outside of the water front line and extending the sheds over this space. The berthing spaces between the two piers are therefore shorter than those outside.
>
> There are to be installed on these piers up-to-date freight handling devices consisting of traveling cranes, telphers, and shiptowers, the first installation of the kind on the San Francisco water front. These devices are to be installed by the steamship company.
>
> The contract for these piers includes a section 280 feet 8 inches long of seawall and bulkhead wharf closing the gap hitherto existing north of Pier 34. This is the same type of construction as described for pier No. 17. (BSHC 1913:43-46)

Pier 30-32 was completed 2 January 1914 at a total cost of $1,002,054.53. As shown on the original drawings, it was built with the name "American-Hawaiian Steamship Company" in the parapet. The facade was designed to be compatible with Piers 26 and 28 in the "modified Mission Style" (BSHC 1914:12, 30, 107-108).

The American-Hawaiian Steamship Company operated Pier 30-32 until the 1930s. By 1927, it was joined at the pier by Matson Navigation Company. Under those companies Pier 30-32 was a center of trade first with Hawaii and later with other Pacific destinations.

In 1926, plans were prepared for an extension of the piers:

> In order to furnish additional accommodations for the increasing business of the Matson Navigation Company, Piers 30 and 32 were extended to the pierhead line, a distance of 125 feet. The substructures are of reinforced concrete pile and deck construction, and the sheds are of timber with steel rolling doors. On account of the depth and the nature of the foundation material it was necessary to deposit 66,000 cubic yards of second-class rock to provide holding ground for the concrete piles. The dumping of rock was completed on March 4, 1927, the

substructure on February 20, 1928, and the superstructure on April 4, 1928. (BSHC [1928]:39)

G. A. Wood was in charge of this work, under the supervision of Frank G. White, Chief Engineer.

A wharf was designed connecting the piers in 1950, and construction was completed in 1952. This provided more access by truck and rail, and created a third berth along the outshore end of the combined piers in place of the one lost between them. G. A. Wood was in charge of this work, under the supervision of Harry E. Squire, Chief Engineer.

The complex was operated by Matson Navigation and Matson Terminals until at least 1962. The transit sheds and bulkhead building were destroyed by a huge fire in 1984 (Wallace and Lang 1984:1), leaving the substructure in place.

Red's Java House (Pier 30)

See also Section 10 of the bulkhead wharf (Contributing Resource) and Pier 30-32 Section 8 (Lost Feature).

Description

Red's Java House is a one-story, wood-frame restaurant that is built on the extreme northwest corner of Pier 30, near the Embarcadero sidewalk.

The original building, built by the mid 1930s, was roughly square in plan with a hip roof. Two low-pitched, slightly gable roofed extensions to the rear were built by 1949 (Sanborn Map Company 1949:volume 2, p. 116), evident in the first case by the roof shape and in the second case by differences in fenestration. These extensions have a slightly different footprint from that shown on the 1949 Sanborn map — in 1949 they tapered to the rear and in 2003, the original building and its extensions are rectangular. A photograph of Red's Java House during the fire that destroyed Pier 30-32 in 1984 seems to show the rear of Red's Java House on fire (Wallace and Lang 1984). Perhaps the rear was rebuilt after that time.

The building measures about 20 feet in width by 50 feet in depth. It is clad in flush wood siding, has fixed wood windows, and has paired, metal-clad wood doors with upper lights. A sheet metal sign reading "Red's Java House" is mounted on the building. The building is plain, without moldings or ornamentation.

Some of the interior finish is characteristic of the period of significance and may be original. This includes a wood floor, a wood ceiling in the rear lunch room, and simple board casings around the window, door, and counter openings. The wall finish of v-groove wainscot and plaster appears to be new, as are the tables and stools.

The simplicity of this building and its details are characteristic of the working-class restaurants on the waterfront in the 1930's to 1950's.

Construction History

The building appears in two photographs (hanging in the restaurant in 2001): one from the 1920s or 1930s, before the Bay Bridge was built; and the other from about 1935, when the adjacent San Francisco – Oakland Bay Bridge was under construction. The front of the current building has the same roofline, fenestration, and door placement as was shown in the two photographs.

The footprint of the hip-roofed front section of the building is shown in the 1949 Sanborn map. The additions were built after 1949. While the front of this building appears to be the same structure on the site since before the Bay Bridge was built, it is surprising that the huge fire that destroyed the other buildings on Pier 30-32 in 1984 did not also destroy this building. Perhaps the rail spur that separated this from the main buildings served as a fire break. Because this building was on the pier rather than by itself on the bulkhead wharf, it seems possible that it was originally built as a wharfinger's office or for some other working purpose rather than as a restaurant.

The use of this building as a waterfront restaurant dates back to a time when restaurant life flourished on the waterfront. After the 1934 strike resulted in the establishment of a hiring hall, waterfront workers gathered in restaurants like this in the morning instead of waiting for work at the shape up.

Red's Java House is located on Pier 30-32 which lacks integrity and is outside the historic district boundaries.

Pier 34

See also Section 11 of the bulkhead wharf (Contributing Resource).

A photograph of the newly completed Pier 34 appeared in the biennial report for 1908-1909. Pier 34 was built around the same time as Piers 36, 38, and 40 and it was similar "in its general arrangement and dimensions," although it was built of less permanent materials and design — a wood shed and deck structure with concrete encasing the wood piles (BSHC 1910:24, 36). Pier 34 measured 139 by 652 feet. Like Piers 36, 38, and 40 it was built before the Board of State Harbor Commissioners adopted a policy of architectural ornamentation — it had no bulkhead building and a plain front.

Pier 34 was demolished in 2001 (Port of San Francisco 2004).

Pier 42

See also Section 13 of the bulkhead wharf (Contributing Resource).

Pier 42 was built in 1906 and rebuilt in 1918. A photograph of the newly completed Pier 42 appeared in the biennial report of 1916-1918. This was a wood structure that measured 144 by 935 feet. The bulkhead building was clad in smooth stucco and covered by a red tile roof. It consisted of a central gabled entrance pavilion and wings with arched windows (BSHC 1919:35, 38, 54). Pier 42 was occupied in the 1920s and 1930s by Dollar Steamship Lines.

Pier 42 was intact in 1949 (Sanborn Map Company 1949). By 1975, approximately three quarters of the transit shed at the outshore end of the pier was gone (Cameron 1975:35). This was still standing in 1985 (SFAH n.d.). The entire structure was gone by 2001.

Pier 44

See also Section 13 of the bulkhead wharf (Contributing Resource).

Pier 44 was built in 1904 (Ebasco 1959). The original concrete-cased piles were replaced by creosoted piles and a new bulkhead building was built in 1916-1917 (BSHC 1916:36, 39). A photograph of the newly completed wood structure appeared in the biennial report of 1916-1918 (BSHC 1919:106). With a later extension, Pier 44 measured 149 by 967 feet (Ebasco 1959). The bulkhead building with its smooth stucco walls, red tile roof, central entrance pavilion and lower wings was similar in form to Pier 42. The details were reversed, however, with a central arched entry and rectangular openings in the wings in Pier 44. Pier 44 was still standing in 1975 (Cameron 1975:35). By 1983 it was gone (SFAH n.d.).

Pier 46 (also Pier 46A)

See also Pier 46 Section of the bulkhead wharf (Contributing Resource).

A photograph of the newly completed Pier 46 appeared in the biennial report for 1916-1918. This replaced a pier that was destroyed by fire in September 1914 shortly after it was completed. Pier 46 was a wood structure that measured 201 by 679 feet. The bulkhead building, clad in metal lath and smooth stucco "was also planned so as to harmonize with the front under construction on Pier 44." It consisted of a central entry pavilion, wings with round arched openings, and a red tile roof (BSHC 1919: between 26 and 27, 35).

Pier 46 was still standing in 1949 (Sanborn Map Company 1949). By 1975, the bulkhead building and the transit shed were gone and the pier was used for storage of new cars (Cameron 1975:35). By 2001 the pier was also gone.

Pile Driving Rigs

See also Pile Drivers – Section 8 (Labor)

The last two steam driven pile hammers at the Port of San Francisco were mounted on Pile Driving Rigs No. 2 and No. 3. These were operated until 2003. In 2004, they were sold.

Pile Drivers No. 2 and No. 3 were floating pile drivers, mounted on barges; they were towed by tugboats to work in different areas of the port, but were moored or anchored during pile driving (Chellis 1961:82; Johnson and Lee 2002).

Pile driving equipment has two main components: the hammer, and the rig, with many possible variations. Pile Drivers No. 2 and No. 3 were drop hammers, driven by steam engines; diesel tanks mounted on the backs of the rigs kept the fires going. The steam engine picked up the hammer and dropped it. Drop hammers (different from true steam hammers, which operate automatically) are described by civil engineer Robert Chellis (Chellis 1961:74; Quint 2002):

> The weight is raised by a rope running over the top of a framework and extending back to a drum or geared shaft. It is released by tripping it to drop free of the rope or by releasing the drum to allow the rope to unwind. The drag of the rope and drum reduces efficiency.

The pile driving rig serves as the framework and platform to support the engine, boiler, winches and drivers. Frameworks for drop hammers like Pile Drivers No. 2 and No. 3 are usually made of wood (Chellis 1961:78).

A wood deck house, mounted on the deck of the rig, houses the boiler, engine and spools, along with a small kitchen for workers (Quint 2002; Johnson and Lee 2002).

Rigs have wooden superstructures, known as towers, or lofts, that rise 90 feet above the platform, or deck of the rig. The towers, which have horizontal rungs ("guards") for workers to climb to the top, have central vertical openings, known as the leads, where the hammer moves up and down (Johnson and Lee 2002).

Pile Driving Rigs designated No. 2 and No. 3 were owned by the Board of State Harbor Commissioners since at least 1930. New pile driving rigs designated No. 2 and No. 3 were built by the Board of State Harbor Commissioners and put into operation in 1951. They were used continuously in maintenance work at the port until 2002-2003. As recently as 1967 there were four pile driving rigs like No. 2 and No. 3. By 2001, one was scrapped and one sold for commercial use in Sausalito. In 2004, the Port sold Pile Driving Rigs No. 2 and No. 3 to an Amador County organization that will dismantle them and reuse the steam engines in a sawmill.

DEFINITIONS

The definitions of many terms at the Port of San Francisco have had different meanings over time and different meanings at the same time in relation to other places. For example, mooring bitts — a term for a fixture on the edge of a wharf or pier, usually cast iron, for tying up ships at berth — are so labeled on Port of San Francisco plans, but were commonly referred to as bollards by longshoremen. The terms dock, wharf, and pier are largely interchangeable in San Francisco but have very different meanings elsewhere at different times.

The Port's Maritime Division contributed to these definitions.

Apron – An apron is the perimeter area of a pier, constructed of concrete or wood. Aprons generally concrete aprons are lighter weight construction than the piers to which they are attached wood aprons need to be replaced periodically. A wood apron and fenders with its pile-supported deck better absorbs the impact of docking ships and is cheaper to replace. While the concrete center of most piers is covered by a transit shed, aprons are open areas adjacent to the water across which break bulk cargo is moved between ships and transit sheds, or onto which wagons, rail cars on rail spurs, trucks, on other vehicles come for the loading and unloading of cargo.

Berth – The water area, at the waterfront edge of a wharf or pier, reserved for a vessel.

Bollard – A post usually of cast iron, secured to a wharf or pier and used to moor vessels by means of lines extending from a vessel, and fastened to the post.

Break Bulk Cargo - It is shipped in different kinds of packages — boxes, crates, cases, bags, barrels, cans, bales, drums, and sacks. break-bulk cargo, is cargo which is "broken down" into smaller units for handling. It is loaded and unloaded in a labor intensive process by longshoremen with the aid of cranes, winches, and other devices.

Bulkhead Building - A bulkhead buildings is a structure that encloses the space at the in shore ends of piers facing the Embarcadero above the deck of the bulkhead wharf . Bulkhead buildings may or may not have been built at the same time as a pier or transit shed and bulkhead buildings were differentiated by the use of materials, dimensions and architectural treatments. Bulkhead buildings typically accommodated offices and passenger facilities and incorporated

arch ways for the passage of rail cars, trucks, and other vehicles on and off of piers. Most bulkhead buildings are architecturally embellished.

Bulkhead Line – Boundary set by the U.S. Army Corps. Of Engineers beyond which solid fill may not be extended. This rule is modified under certain conditions when solid fill construction is permitted between pier head and bulkhead lines.

Bulkhead Wharf – The bulkhead wharf is a series of linked structures paralled to the shoreline and on top of the seawall.. The bulkhead wharf was built to provide berthing space for ships at the very outer edge of the seawall, which corresponded with the legally designated Waterfront Line. Because ships could not have come any closer to shore than the toe of the sloping seawall, without the bulkhead wharf they would have remained as much as 60 feet away from the top of the seawall. There would have been no way to load or unload ships along the seawall without the bulkhead wharf. Parts of the bulkhead wharf also serve as the inshore ends of piers; the bulkhead wharf at the ends of some piers one occupied by bulkhead buildings. Elsewhere, the bulkhead wharf is an open surface for the staging of the loading and unloading of ships or it supports scattered small structures such as waterfront cafes, and at one time, wharfinger's offices. Originally built of wood, the bulkhead wharf has been replaced since 1912 as a reinforced concrete structure with concrete piles supporting a concrete deck that was paved in asphalt.

Closed Shop/Open Shop

The Rev. Jerome L. Toner provides a contemporary definition of the "closed shop," also known as the "union shop, " in his book, *The Closed Shop*, published by the American Council on Public Affairs in 1942. The term, popularized by employers in the early years of the twentieth century, was an effort to stigmatize union influence in the workplace. As a principle and practice, the closed shop was fundamental to the English guild system and was adopted by labor unions in the United States from the earliest period of American history (Toner 1942:185):

> The closed shop, as usually expressed in current labor agreements, means 1) that the employer agrees with the union that all employees covered by the agreement — and in some agreements, all the employees of the employer — shall be, or become, and remain union members in good standing, or be discharged; 2) that a certain hiring procedure shall be observed, varying according to industries and occupations, from that of hiring only workers who are members of the union to

that of hiring any worker who is willing to join the union within a specified period of time (Toner 1942:1).

The "open shop" policy adopted by employers has historically meant "either frankly or implicitly, an anti-union shop" (Toner 1942:9). In 1921 the Chamber of Commerce of the United States defined the "open shop" as "the right of the employer and employee to enter into and determine the conditions of employment relations with each other." In 1936 the Chamber elaborated upon this definition, declaring that the "open shop" meant "employment without regard to membership or non-membership, in any organization of lawful purpose," signifying the "freedom of individuals, or groups of employees in their employment relations from domination by a majority or any part of their fellow workers or workers in other establishments" (Toner 1942:131).

Connector Building - A building located on and enclosing the space above a connecting wharf between piers. See also Pier Annex.

Connecting Wharf – A wharf addition to the bulkhead wharf for the purposes of increasing the depth of a bulkhead wharf. A connecting wharf may be a modest 160 feet in depth as is the case at Piers 29-31 or may result in the complete infill of the former wet basin between piers as is the case at Piers 15-17.

Fender Pile – Pile driven close to a wharf, pier apron, or other structure to prevent contact and injury to a ship or port wall structure. Fender piles were typically wood because wood absorbed the impact of berthing vessels.

General Cargo

San Francisco was primarily a general cargo port. In 1939, the principal commodities were petroleum products, canned goods, sugar, lumber, and fresh and dried fruits.

Captain J. G. Ludlow, vice-president of a San Francisco stevedore company in the 1930s, summed it up neatly: "The cargo loaded at this port consists mainly of canned goods and dried fruit, whereas the westbound cargoes carry everything from a needle to an anchor" (Ludlow, NLB 1934:Vol. 8:560; Board of Engineers 1939:124).

The career of Harry Curtis, who started longshore work in San Francisco in 1922, illustrates the huge variety of commodities handled there, as well as the types of employers and jobs available

to longshoremen at the time. He worked on the piers handling Alaska salmon, pineapple, steel and sardines, as well as general cargo — "everything from toothpicks to steam boilers." He said in 1934:

> I began twelve years ago for the California Stevedore & Ballast Co. on what is known as the Alaska Fishermen ships, on the dock, pulling a truck handling the salmon after it came back from Alaska in the cases. I went from there to the Matson Navigation Company. I worked there in the hold of ships handling pineapple. From there I went to what is known on the waterfront as the steel dock, the Norton Lilly docks. When I was working at the steel dock I was working in the hold. We handled steel, tin plate, nails, sheet steel, and sheet tin, long steel, I-beams — everything that comes in the way of steel. In the interim between the Matson Navigation and the steel dock I worked on a little steam schooner called the San Antone, it was hauling sardines into San Francisco. In loading out we loaded everything from, I will say, toothpicks to steam boilers. Naturally, I was working then on the dock . . . (Harry Curtis, NLB 1934:Vol. 4:354).

Longshore Gang

Longshoremen on a break-bulk operation are organized into working gangs made up of three basic groups: the men on the pier (dockmen); the men on the ship's deck (deckmen); and the men below deck (holdmen), who load and unload cargo in the ship's hold, its "basement" storeroom under the main deck. Some longshoremen have occupational specialties. Deck men might have been winch drivers, and dock men included jitney drivers.

The standard longshore gang in San Francisco had about 16 men in the 1920s: one gang boss, two deckmen, six holdmen, six dockmen and one winch driver. There were many variations on gang size and composition, however, depending on the job and the commodity. For example, a loading gang usually had eight men in the hold, from two to three men on deck, and six men on the dock, plus a jitney driver. During discharging of cargo there would be six men in the hold, two or three on deck, six on the dock and a jitney driver. (Lewis, NLB 1934:Vol. 2:113).

Longshoremen And Stevedores

Boris Stern and other labor experts have noted that the words "longshoreman" and "stevedore" are often used synonymously, even on the waterfront, while in fact they have quite distinct

meanings. Longshoremen are the men who actually load and discharge ship cargo. Stevedores — often stevedoring companies — are, strictly speaking, the employers. Stevedores hold contracts for cargo operations from shipping companies (Stern 1932:2; Liebes 1942:7).
A 1932 U.S. Department of Labor bulletin on ship cargo handling, provided a useful contemporary definition of the process in precisely defined, stevedoring applies to the transfer of commodities from the ship to the first place of rest on the pier and to the direct transfer of commodities from the ship to a railroad car or lighter, and vice versa. In discharging cargo, stevedoring therefore includes the sorting of the commodities as well as the piling on the pier; in loading cargo it includes the stowing of the cargo in the various ship compartments. (Stern 1932: 1)

Historically, longshoremen themselves have used both terms to refer to their own work, and their own unions. In their testimony before the National Longshoremen's Board in 1934, Bridges and other longshoremen often referred to themselves as stevedores.
The name for longshoremen dates back to the era of sailing vessels. When a ship arrived in port, and was ready for loading or unloading, a ship crier would call out on the waterfront: "Men along the shore!"

Mooring Bitts – Large cast iron fixtures on the edge of a wharf or pier, for the purpose of wrapping ropes around in order to tie up ships when berthing, often referred to as bollards.

Mooring Cleats – Small cast iron fixtures on the edge of a wharf or pier, for the purpose of wrapping ropes around in order to tie up ships when berthing.

Pier – A wharf running at an angle with the shoreline of a body of water, providing a landing place on both sides for vessels to receive and discharge cargo, passengers, or stores of fuel. A pier is comprised of a complex of component elements including pilings, caps that span the pilings, a deck that rests upon the caps all in concrete; around this concrete center is an apron with wood piles and a wood deck. Additionally, piers may also have a transit shed that encloses the space above and covers most of the deck. Some piers may also have bulkhead buildings which enclose the space at the Embarcadero end above the deck of the bulkhead wharf.

Pier Annex – A connecting building built in the late 1920's and 1930's on a connecting wharf to support the transportation and storage needs of packaged freight from adjacent piers (e.g. Piers 24 and 26). These are equipped with a floor and exterior loading dock at a height that permitted the transport of cargo between trucks, tractors and trailer trains. Cargo was transported between the annex buildings and the adjacent piers via the tractors and trailer trains and ramps within the

building that to allow for differences in elevation between the pier apron and the truck loading docks. Annex buildings are often referred to as wharf sheds or connector buildings despite their distinct functional differences and physical separation from adjacent buildings.

Pier Head Line – The Pier Head Line is the outer most limit of pier construction allowed by the U. S. Army Corps of Engineers. San Francisco's Pier Head Line was moved out to a maximum of 800 feet from the Water Front Line. One reason for the acute angles to the shoreline of some of the later piers (such as Pier 45) was to build longer piers that did not exceed the 800-foot limit.

Pile or Piling – A large stake driven in the earth to support a building, pier or other superstructure. It is made of wood, steel, or concrete.

Seawall – A barrier consisting of a pile of rocks, seawall, rising from a trench that was originally dug 20 feet deep and 100 feet wide. At mean high water, the seawall rises almost 40 feet above its base. The natural slopes of the seawall on either side rise to a flat top about ten feet wide.

Seawall (Old) – Constructed between 1867 and 1869 in a zigzag pattern, located inshore of the new seawall.

Seawall (New) – a linear embankment of stone, concrete, and wood constructed between 1878 and 1915 in 21 sections, of various designs, to form a gentle curve that defines the San Francisco waterfront. In shore of the new seawall, fill created new land known as seawall lots.

Substructure – The foundation of a pier or bulkhead wharf that is comprised of piles, caps that span the piles, and a deck that rest upon the caps. Piles may be wood, concrete or a combination of wood and concrete. Caps and decks are always constructed of concrete and steel (except for except for Pier 17 which combines wood and concrete).

Transit Shed – A structure that encloses the space above and covers most of the pier deck. That was historically used for the storage of breakbulk cargo being transported on or off ships, rail cars, and trucks.