GATEWAY TO THE PACIFIC

PROMINENT PIERS & WHARVES IN VANCOUVER

FLORIS VAN WEELDEREN

GATEWAY TO THE PACIFIC

PROMINENT PIERS & WHARVES IN VANCOUVER

FLORIS VAN WEELDEREN

GATEWAY TO THE PACIFIC
Prominent Piers & Wharves in Vancouver
Floris van Weelderen, 2022
www.hal-vas.com

First published 2023

ISBN: 978-1-7774016-0-3

Any errors and omissions are completely mine - Floris van Weelderen

Pier - a structure extending outward at an angle from the shore into navigable waters normally permitting the birthing of vessels on both sides along its entire length[i]

Wharf - a structure extending parallel to the shoreline, connected to the shore at more than one point (usually with a continuous connection) and providing in most cases berthing at the outshore face of the structure only[ii]

DEDICATION

This project is dedicated to:

Michael James O'Rourke, VC, MM (1878 – 1957) Irish-Canadian miner, soldier and dockworker who was a recipient of the Victoria Cross, the highest and most prestigious award for gallantry in the face of the enemy that can be awarded to British and Commonwealth forces.

During the First World War, O'Rourke served with the 7th Battalion (1st British Columbia), Canadian Expeditionary Force as a stretcher-bearer.[iii] In 1916, Private O'Rourke received the Military Medal for his conduct in the Battle of the Somme. Subsequently at age 39, Pte O'Rourke earned the Victoria Cross for most conspicuous bravery and devotion to duty during prolonged operations over a three-day period during the fighting for Hill 70 near Lens, France in August 1917.[iv]

Mickey O'Rourke returned to Vancouver after the war and became a longshoreman. On June 18, 1935, wearing his Victoria Cross and Military Medal and carrying the Union Jack, the 57-year-old O'Rourke led a parade of 1000 striking waterfront workers. As the strikers marched towards the waterfront with the intention of picketing the docks and "persuading" scabs to join the strikes, squads of police on foot and on horseback began lining the streets along the railway tracks. When the marchers and police came into each other's view, the police attacked using tear gas and "billie" clubs to beat many of the fleeing marchers in what came to be known as the Battle of Ballantyne Pier.[v]

After the strike, O'Rourke disappeared from public life. He had a hard life, subsisting on his disability pension, a biannual VC gratuity and casual jobs. A heavy drinker, O'Rourke lived in dingy hotel rooms on Vancouver's Downtown Eastside. Cashing his cheques, he spent most of his time in nearby bars, not an uncommon existence for thousands of returned soldiers. It took some convincing but Mickey O'Rourke attended the 1956 Victoria Cross centenary celebrations in London, England. Shortly thereafter, he died at the age of 83 on December 6, 1957, at his sister Sadie's house in Vancouver. Although most of his life was spent in poverty, Michael James O'Rourke was given a hero's funeral. A motley crowd attended this unique event: seven Victoria Cross recipients, judges, aldermen, and generals alongside "Mickey's old pals from the 7th Battalion … grey and grizzled dock-workers, and homeless old-timers from Powell and Main Streets."[vi]

CONTENTS

ACKNOWLEDGEMENTS

The Port of Vancouver's terminals, wharves and piers sit on the unceded traditional territories of the **Musqueam**, **Squamish**, and **Tsleil-Waututh First Nations**, who relied on the waters of the Burrard Inlet and have a saying "When the tide goes out, the table is set" – referring to the abundance of food that came from the inlet.[vii]

This adventure in researching, documenting, and sharing the evolution of Vancouver's waterfront from forested shoreline to bustling seaport would not have been possible without the moral, technical, and financial support of the following people and organizations.

- **Amy & Jasper van Weelderen**
- **Judicus & Mieke van Weelderen**
- **Michael Kluckner** – President, Vancouver Historical Society

And special thanks to **Yvon Lantaigne** of Studio Madillo Creative Services Inc. for the excellent work on the creation of all maps and archival photo enhancements.

INTRODUCTION

Vancouver. Terminal City.

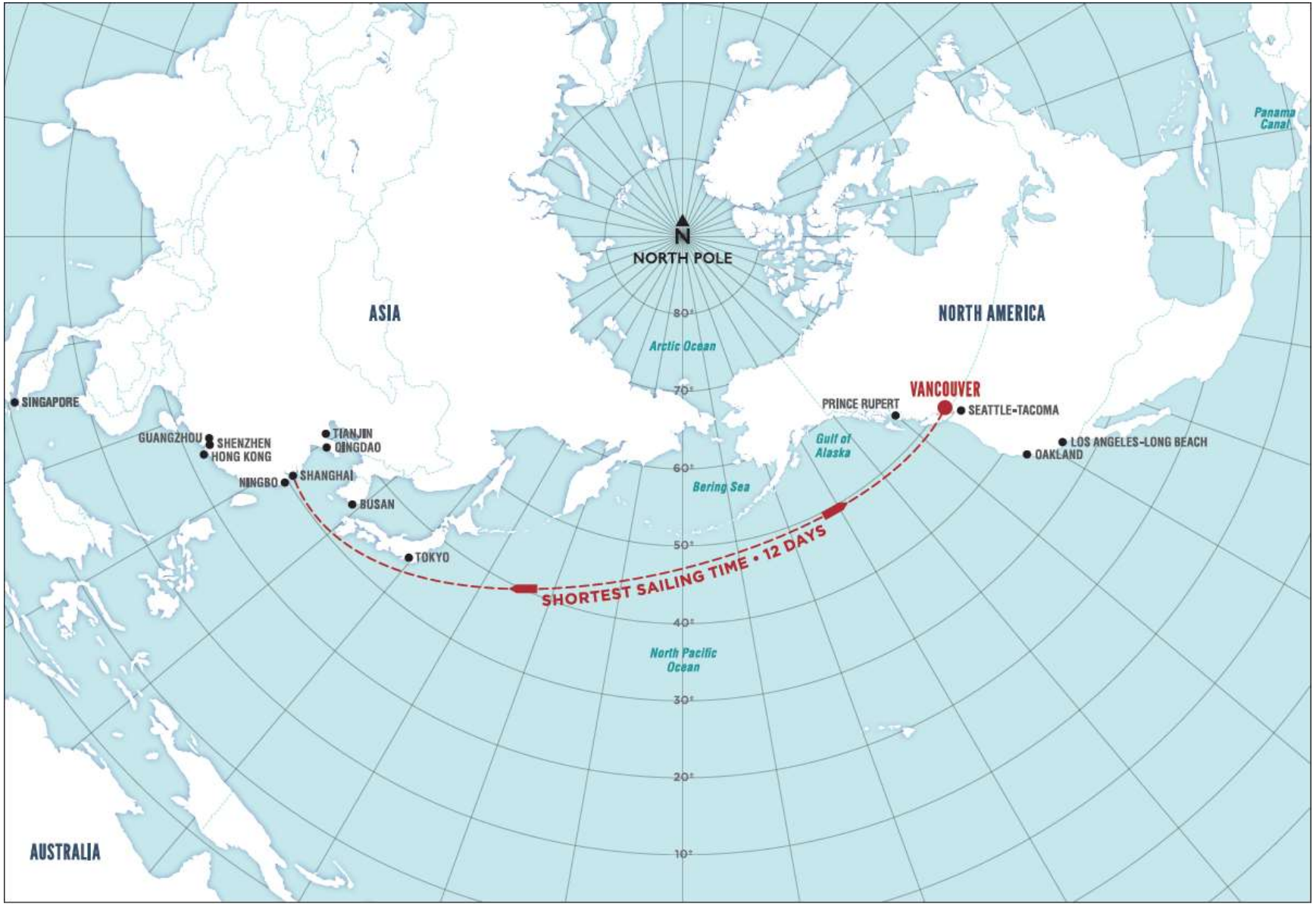
Between the water's edge of Burrard Inlet's South Shore and the steel tracks of the Canadian Pacific Railway is a narrow strip of land that stretches east about 5.5 miles (9 km) from the towering trees of Stanley Park to the bluffs of Burnaby. All manner of cargo has been transferred across its various piers and wharves from ship to shore and shore to ship since before British Columbia joined confederation in 1871.

Today, the Port of Vancouver, formally known as Vancouver Fraser Port Authority is Canada's largest seaport extending from Roberts Bank north across the Fraser River delta and up to and including Burrard Inlet. Home to twenty-seven major terminals, the port handles the most diversified range of cargo in North America: bulk, containers, breakbulk, liquid bulk, automobiles, and cruise passengers. As our country's Gateway to the Pacific which includes over 170 trading economies around the world, the port handles $1 of every $3 of Canada's trade in goods outside of North America enabling the trade of approximately $200 billion in goods.

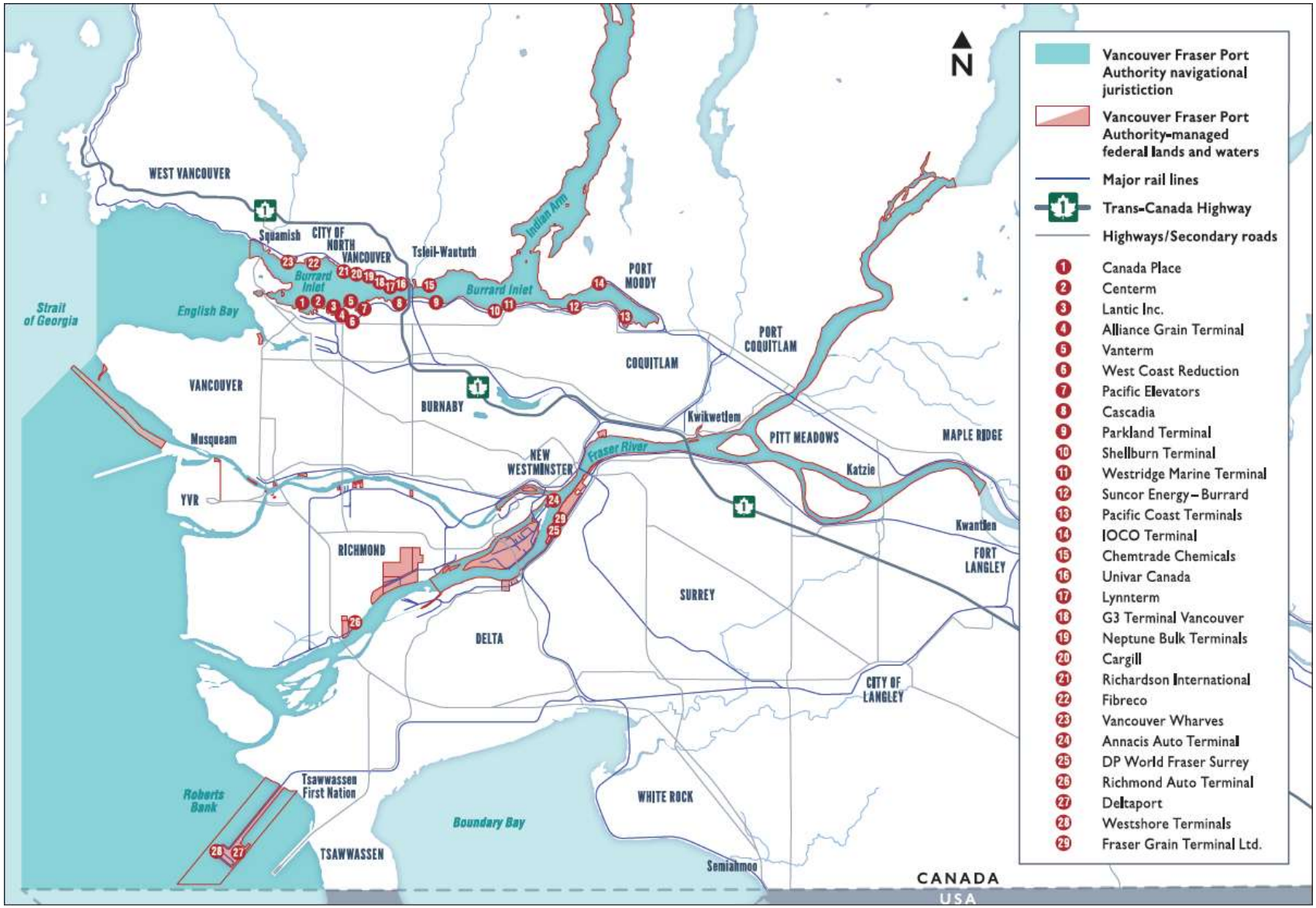
The port traces its origin's to the latter half of the 19th century when lumber exports ruled supreme. Sawmills popped up on both the North and South Shores of Burrard Inlet and the lumber needed to get to its overseas markets, including the Pacific West Coast, Australia, and Asia. Trade expanded significantly with the arrival of the Canadian Pacific Railway (CPR) in 1887 and the opening of the Panama Canal in 1914. Outbound cargos included lumber and grain while inbound cargo included breakbulk (e.g. bales of silk, cases of whisky, crates of perfume or machinery, drums of oil, boxes of tea, barrels of beer, etc.). Without the canal, ships would have to sail all the way around South America to reach Europe, an additional 8,000 miles. Low freight rates in the early 20th century resulted in Vancouver becoming a more feasible shipping hub to Europe and Asia for bulk commodities such as grain and later sulphur, coal, and potash. With the advent of "Unitized Freight Transportation" in the 60's, the port expanded from breakbulk cargo into the container market with an annual capacity of three million 20-foot Equivalent Units (TEUs). Finally, for more than 45 years, Vancouver has been a homeport for Alaska cruises as well as cruises through the scenic Inside Passage of B.C.'s West Coast.

Over time, the port's Vancouver waterfront has evolved dramatically. Initially centered on Hastings Mill at the foot of Dunlevy Avenue, the port first expanded west towards Stanley Park to accommodate the CPR's terminus and then east towards Burnaby as grain became a major export commodity. Today from west to east, Coal Harbour has transformed into an urban forest of highrises; the Mission Revival style CPR Pier B-C metamorphosed into the grand sails of the Canada Place cruise ship terminal; CPR Pier D was razed to the waterline by fire; and the Centennial Pier, Ballantyne Pier, and Great Northern Dock were incorporated into the Centerm container terminal on the site of Hastings Mill. Nonetheless, after nearly a century, Lapointe Pier, the United Grain Growers grain terminal, and Alberta Wheat Pool are still here, just different.

There are far too many piers and wharves along the length of Vancouver's waterfront to describe in a single compendium. Consequently, only the 15 most prominent piers and wharves on Burrard Inlet's South Shore – the original Port of Vancouver – are described herein from west to east. Finally, a glossary defining maritime and nautical terms used herein is provided towards the back.



Vancouver – Gateway to the Pacific



The Port of Vancouver's Terminals

Vancouver's Piers and Wharves – an evolution of the South Shore

VANCOUVER'S WATERFRONT

15 PIERS / WHARVES

FROM WEST TO EAST

CPR PIER A (1911-1968)

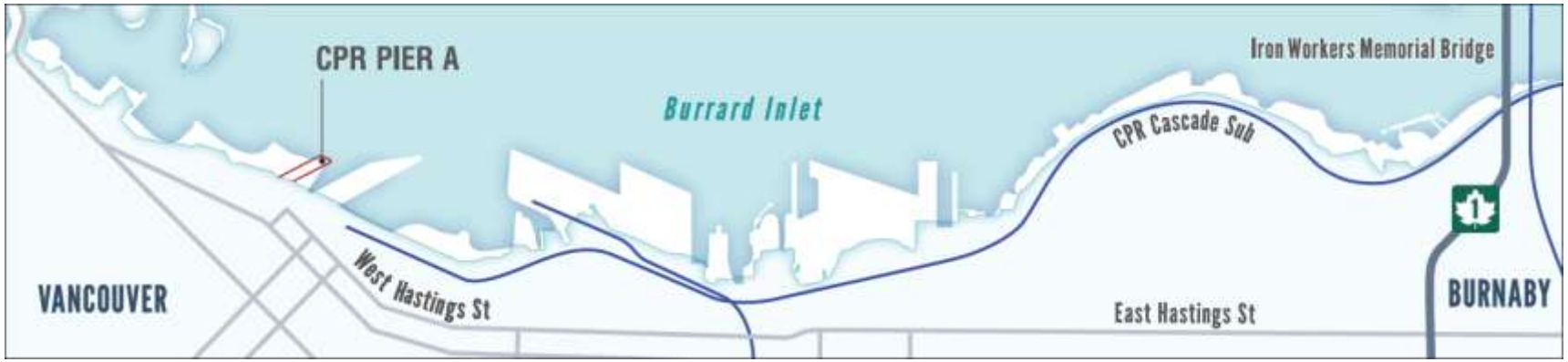
2 FREIGHT SHEDS	2 DEEP SEA BERTHS	3 RAILWAY SIDINGS

THE PIER

Canadian Pacific Railway (CPR) terminus in Vancouver was built on a land grant provided to the CPR in exchange for completing Canada's first transcontinental railway (Settlement Act, 1885). Its piers and wharves were located on Lot 541 (Granville tract) on the western part of the South Shore between Coal Harbour and Carrall Street. Running west to east, CPR piers were labeled A through H while freight sheds on its wharves were numbered 1 to 7.[viii]

Completed in 1911, CPR Pier A consisted of three single-level freight sheds totaling of 60,000 sf (5,575 sq m) around three railway sidings on a 790 ft (240 m) wooden pier. Until the opening Pier B-C in 1927, Pier A served CPR's transpacific liners thereby playing a crucial role in both the rapid and lucrative transport of raw silk across the Pacific and completing the CPR's "All-Red Route". The latter ensured that Her Majesty's Mails travelled exclusively in Royal Mail Ships (RMS) or via British and Commonwealth territory, i.e., CPR transcontinental trains.[ix]

After 57 years of service, the Vancouver Pile Driving Co. demolished the aging wooden structure that was Pier A in 1968.[x] Today, the water lots that were CPR Pier A are occupied by the $615 million Vancouver Convention Centre completed in late 2008 and home to the 2010 Olympic and Paralympic Games media and broadcast centre.



KOMAGATA MARU INCIDENT

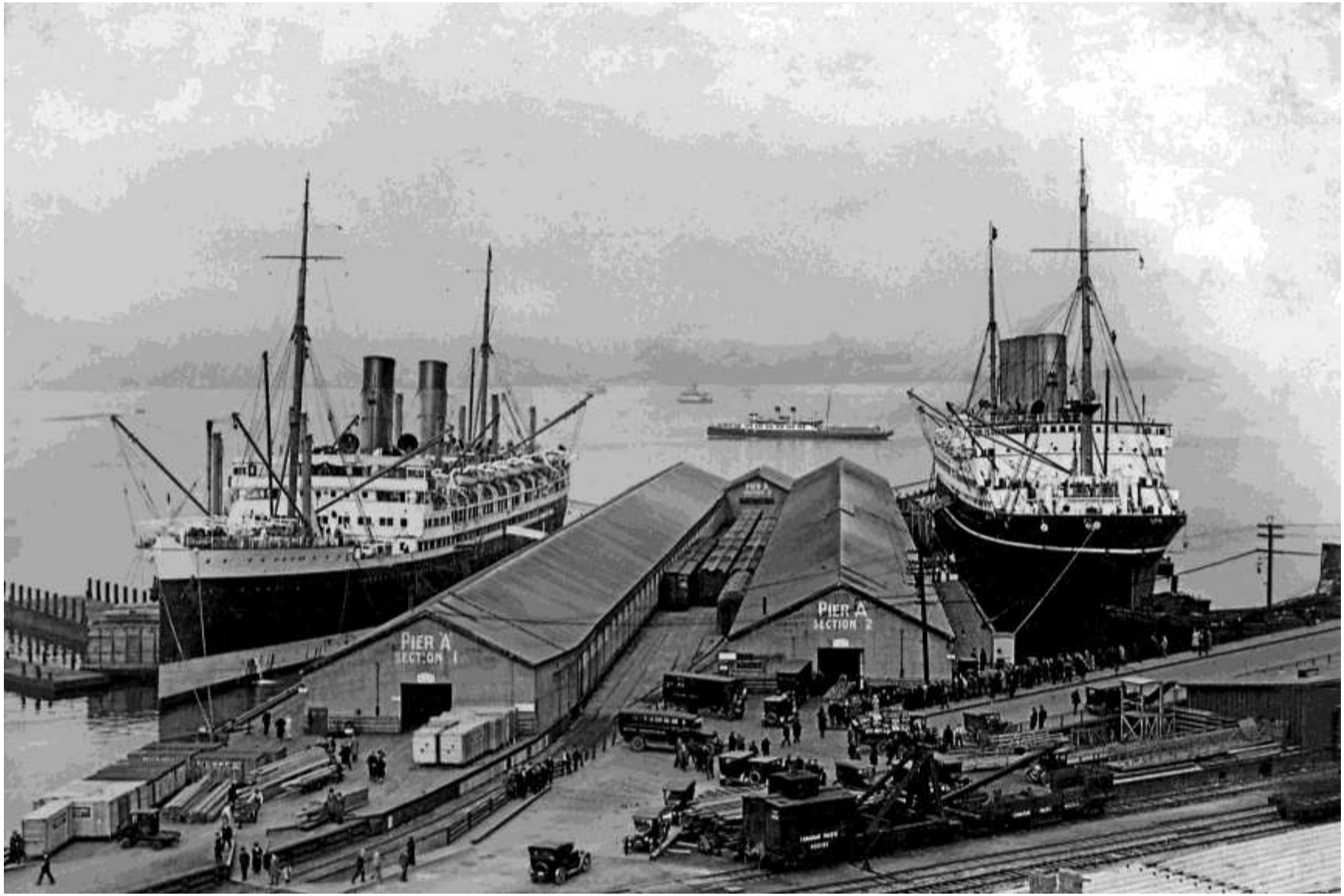
On May 23, 1914, the *SS Komagata Maru* arrived in Burrard Inlet from Hong Kong carrying 376 passengers, most being immigrants from Punjab, India, with the intent of docking at CPR Pier A. The passengers, all British subjects, were challenging the Continuous Passage regulation, which stated that immigrants must "come from the country of their birth, or citizenship, by a continuous journey and on through tickets purchased before leaving the country of their birth, or citizenship." The regulation had been brought into force in 1908 in an effort to curb Indian immigration to Canada. Other than 20 returning residents, the ship's doctor, and his family, who were granted admission to Canada, the remaining passengers were denied entry by the authorities. The crowded cargo ship was forced to moor about 500 m off-shore in Burrard Inlet.[xi] After the local authorities were rebuffed in their attempts to make the ship leave, the Royal Canadian Navy cruiser *HMCS Rainbow* was ordered to intervene. After some discussion with the passengers, who had taken over the vessel, those aboard *Komagata Maru* agreed to leave Vancouver only when supplies for the ship were provided.[xii]

Escorted from Vancouver by the Rainbow, the *Komagata Maru* sailed on July 23, 1914, destined for Budge-Budge, India. Here, 19 passengers were killed by gunfire upon disembarking. Many others were imprisoned by the colonial authorities.[xiii]

THE SILK TRADE

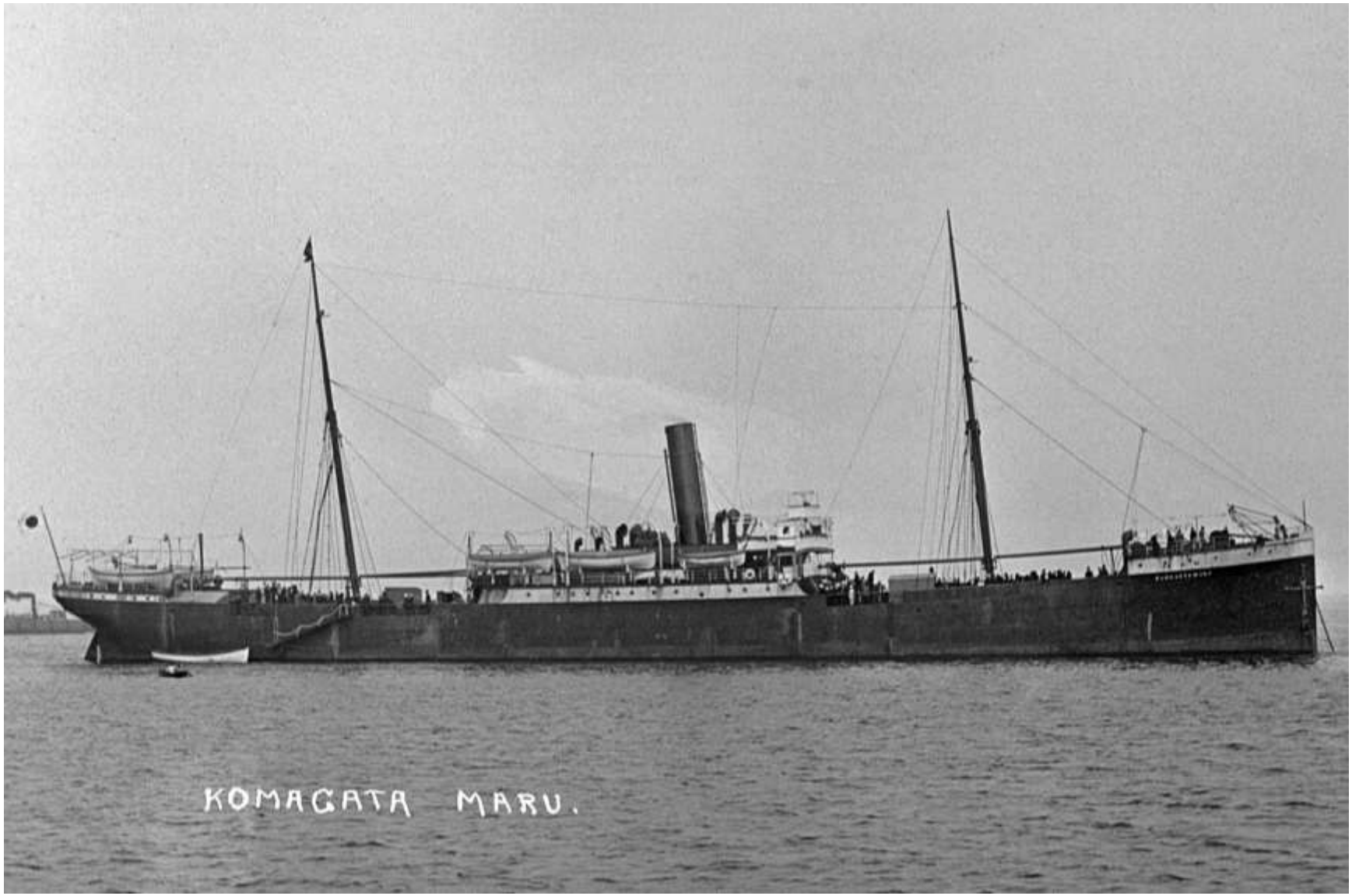
Between 1887 and 1935, the import of raw silk was extremely lucrative for the west coast ports, especially in its heyday of 1927 when over 154,000 bales valued at over $174 million (28% of the North American trade) flowed through Vancouver.[xiv] Speed was essential. At $8.50 per pound, raw silk was of such immense value that insurance rates on a million-dollar shipment were calculated by the hour.[xv] Sped from Asia across the Pacific to Vancouver by steamship; the silk bales would be quickly loaded onto special dust-proof box cars and swiftly transported by train across the continent to New York's silk mills.

One such journey started in Yokohama on March 22, 1924, when the *RMS Empress of Asia* departed for Vancouver. Arriving nine days later on March 31st, longshoremen used hand trucks to quickly move the bales from ship, through Canada Customs, and onto box cars prepositioned on CPR Pier A; taking an average of 13.5 minutes to load a rail car. The silk train or "silkie" then raced east to New York City arriving on April 4th just before midnight; 13 days, eight hours, and 13 minutes after leaving Yokohama.[xvi]

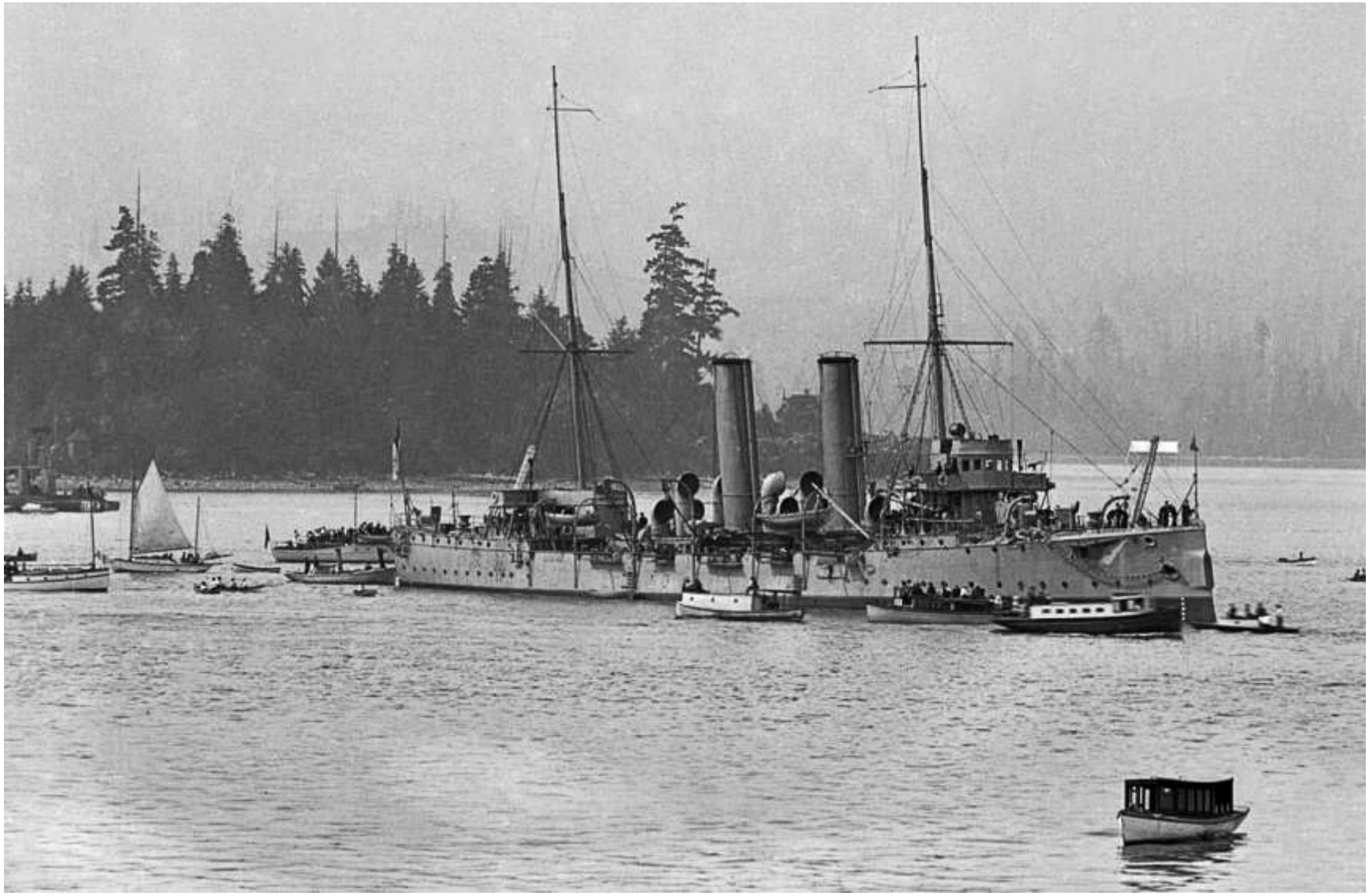


RMS Aorangi (left) and *RMS Empress of Asia* (right) moored at CPR Pier A on February 6, 1925.
(Vancouver Archives, CVA 152-8.3, Price family)

CPR Locomotive No. 2651 and special wood-lined steel box cars of a silk train or "silkie" ready to depart for New York on December 4, 1928.
The gentleman is a CPR Police inspector ensuring there are no unauthorized persons attempting to ride the train.
(Vancouver Public Library, VPL 15641, Photographer - Leonard Frank)

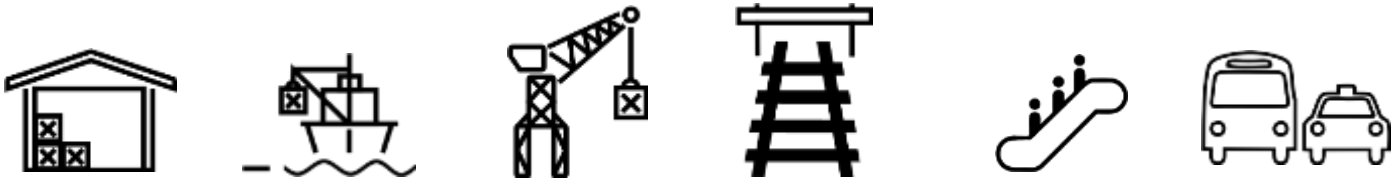


The Japanese-flagged *SS Komagata Maru* at anchor in Burrard Inlet with would-be immigrants on deck, July 1914.
(Vancouver Archives, CVA LGN 1034, Major Mathews collection)



HMCS Rainbow in Burrard Inlet with a flotilla of well-wishers, July 1914.
(Vancouver Archives, CVA LGN 1031.2, Major Mathews collection)

CPR PIER B-C (1927-1970)



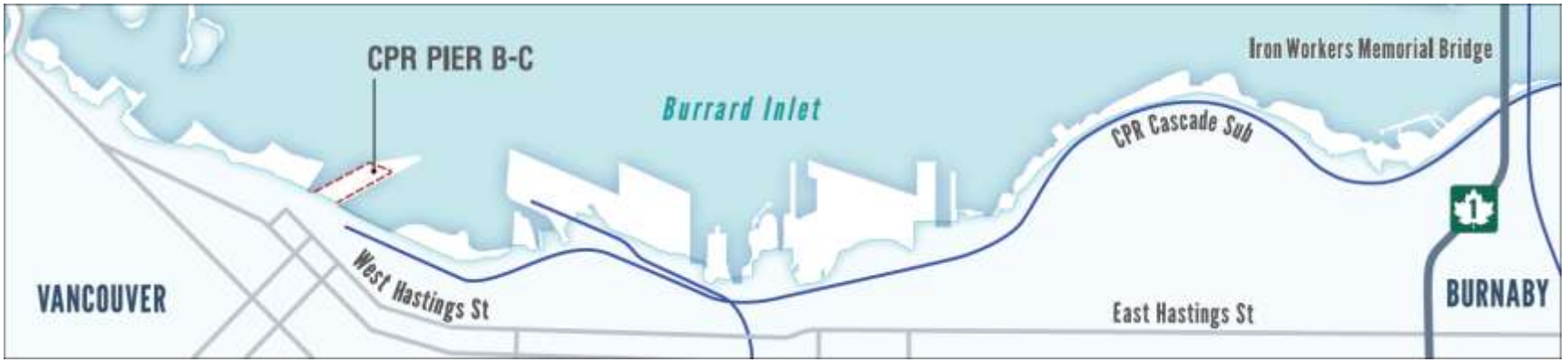
2 FREIGHT SHEDS	4 DEEP SEA BERTHS	3 SINGLE JIB PORTAL CRANES	8 RAILWAY SIDINGS	PASSENGER FACILITIES	GROUND TRANSPORT

THE PIER

Midway between CPR Pier A (1911) and Pier D (1914) is CPR Pier B-C. This pier was constructed between 1924 and 1927 for a reported $4 million. It provided the additional wharf space necessary for the growing Canadian Pacific Navigation Company to serve both international (east-west to Japan, China, and Hong Kong) and coastal (north-south to Seattle, Victoria, and Alaska) routes.

Located steps away from Burrard Street's Marine Building and Granville Street's CPR Station, Pier B-C consisted of an 1,100 ft (335 m) long pier structure providing four deep sea berths and two long storage sheds. The two-storey "Mission Revival" style terminal included First Class passenger lounges, a four-ton two-lane hydraulic passenger gangway, and two (later increased to three) single jib portal cranes to assist with discharging and loading breakbulk cargo. Railway tracks down the sides of the pier connected to the expanding rail yards at the foot of Granville Street while gantries and access ramps allowed cars and foot traffic to cross above. [xvii]

The pier was used until 1970 when Canadian Pacific sold its marine passenger fleet. Subsequently, the pier was gutted to make way for Canada Place.



GRAND OPENING ATTENDED BY THOUSANDS

On July 4, 1927, His Worship Louis D. Taylor, Mayor of Vancouver opened CPR Pier B-C with great fanfare. It was reported that several thousand people attended the event and later toured the building and pier. Witnessed by Vancouver City Council, representatives of various cities and towns along the Pacific Coast, Canadian Pacific Railway (CPR) and shipping companies, the mayor unveiled a magnificent bronze plaque to commemorate the event and Canada's Diamond Jubilee of Confederation. The afternoon culminated with a harbour tour for the mayor and official visitors on board the 331-ft (97 m) pocket liner *SS Princess Louise* of the British Columbia Coast Steamships (BCCS), a division of the CPR. As customary on occasions when a ship is the first to officially land at a newly opened pier, a silk hat and gold-headed stick were presented to Captain A. Slater, master of the vessel. [xviii]

An interesting footnote is that 10 months prior, the Holland-America Line freighter *SS Noorderdyk* was the first deep sea vessel to land at Pier B-C. At 8 a.m. on August 27, 1926, the *Noorderdyk*, under the command of Captain A. Filippo with Captain R.A. Batchelor as pilot, slipped into a berth on the east side of the pier. Mr. S. Junkins, head of the construction firm, was on the pier to welcome the first ship, accompanied by railway officials. It was reported that the landing was made on the last of the flood tide, and the *Noorderdyk* docked so gently and easily that she would scarcely have cracked an egg held between ship and pier.[xix]

GREENHILL PARK EXPLOSION

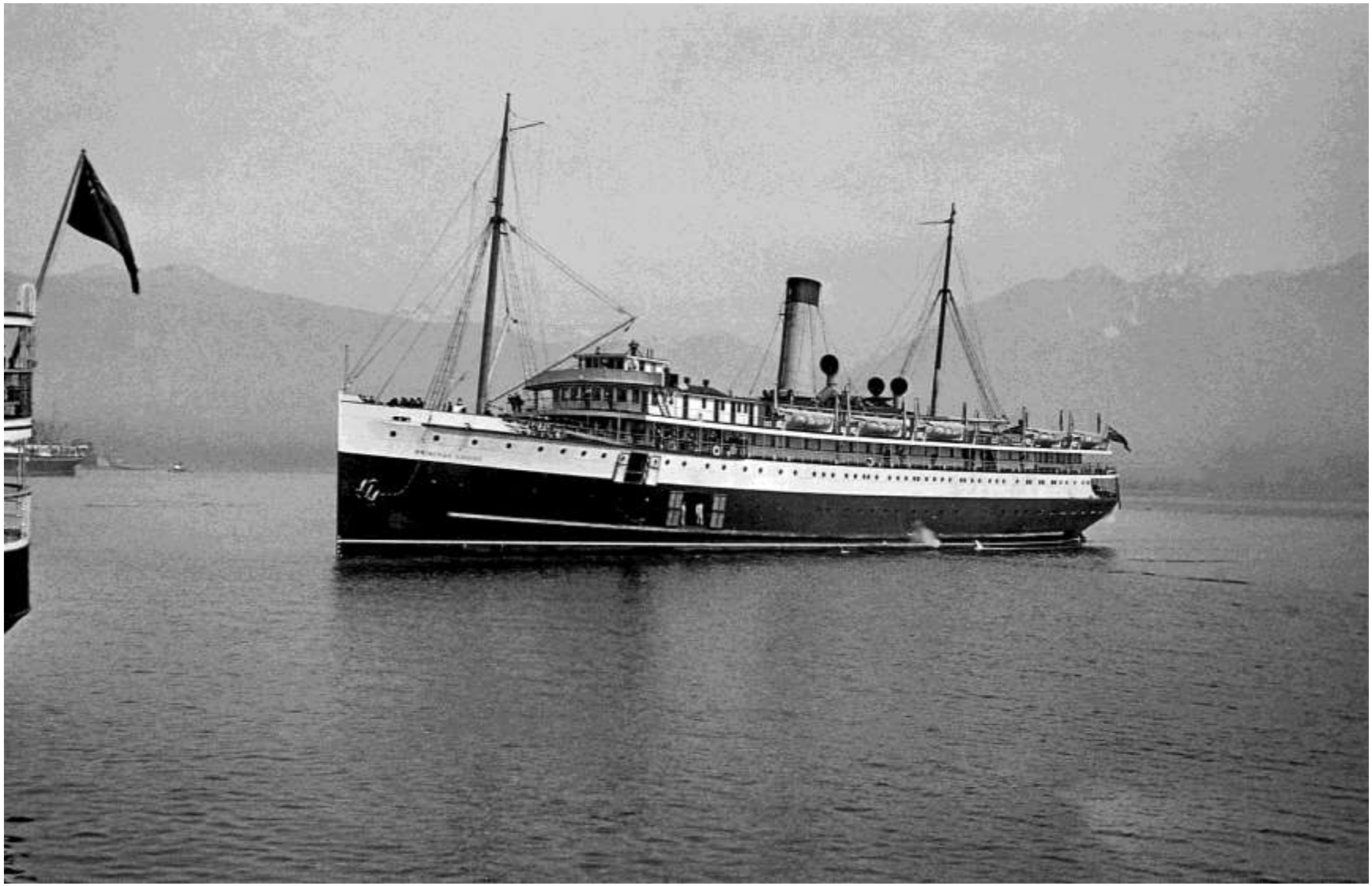
CPR Pier B-C was the site of the March 6, 1945, waterfront explosions on board the 10,000-ton freighter *SS Greenhill Park*, laden with barrels of alcohol, lumber and 85 tonnes of sodium chlorate; easily the most spectacular and disastrous event in the port's history. Eight long-shoremen were killed in four explosions, 19 other workers were injured, seven firemen ended up in the hospital and hundreds of windows in downtown Vancouver, some as far west as Thurlow and as far north as Dunsmuir, were blown out. Whole office blocks were left with scarcely a pane of glass intact.

The still-burning ship was towed out through the Narrows under the Lions Gate Bridge to Siwash Rock, where the raging chemical fire was eventually extinguished.[xx]

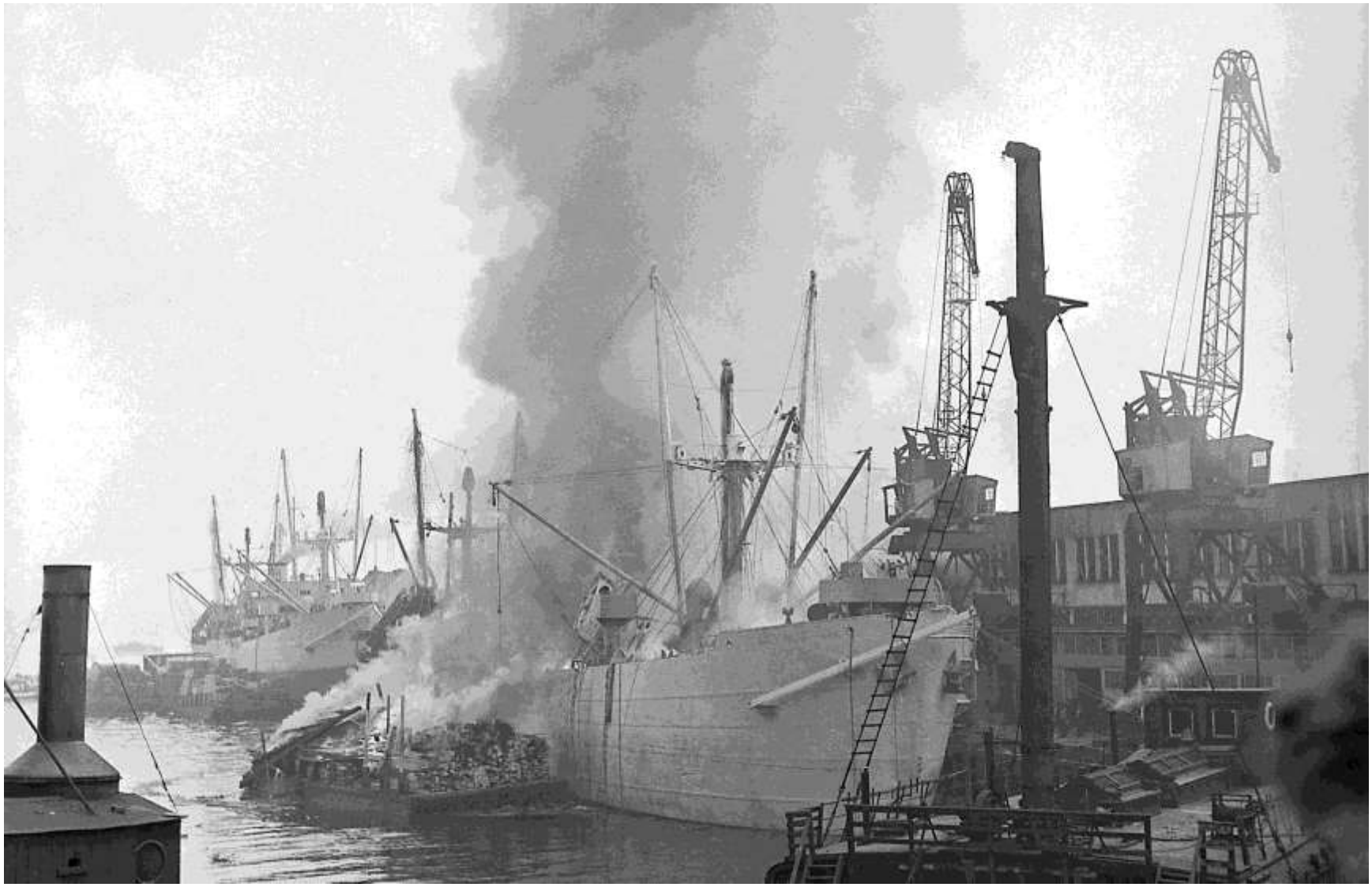
Two months after the blast, a 1,500-page report concluded the explosion had resulted from "improper stowage of combustible, dangerous and explosive material… and the ignition thereof by a lighted match." That match ignited some spilled whisky, as it would later be revealed.[xxi]

Aerial view of CPR Pier B-C (left) and Holland-America Line's combi-liner *MS Dalerdyk* and CPR Pier A (right) in May 1963.
Note the Marine Building at the foot of Burrard Street.
(Vancouver Archives, CVA 296-040)

His Worship Louis D. Taylor, Mayor of Vancouver opening and dedicating CPR Pier B-C on July 4, 1927.
(Vancouver Archives, CVA Can P230, Major Matthews collection)



The British Columbia Coast Steamships' *SS Princess Louise* in Burrard Inlet as she arrives at CPR Pier D.
(Vancouver Archives, CVA 447-2595, Photographer – Walter E. Frost)



SS Greenhill Park in flames at CPR Pier B-C after the March 6, 1945, explosion with a burning lumber scow moored on her starboard side. (Vancouver Archives, CVA 586-3574, Photographer – Don Coltman)

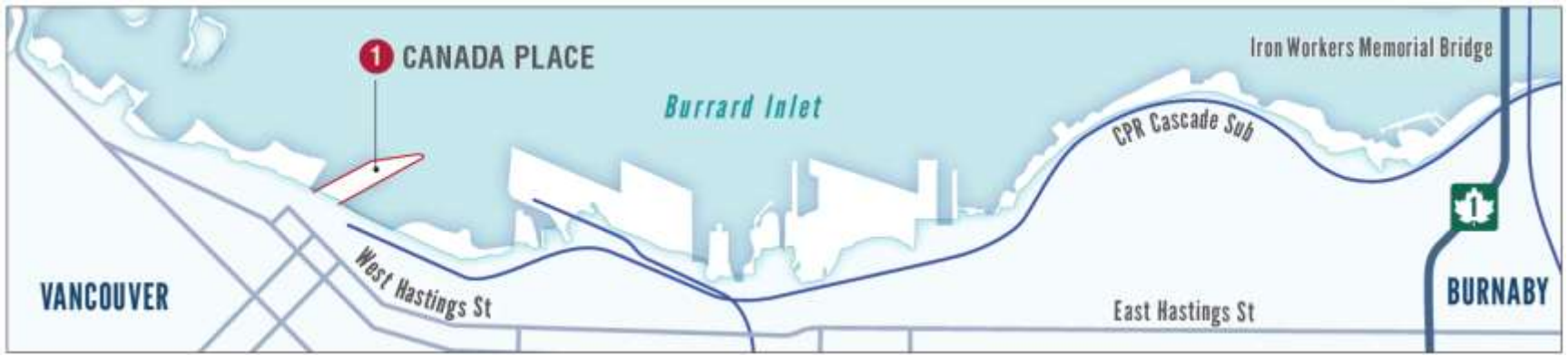
CANADA PLACE (1985-PRESENT)

PASSENGER FACILITIES	3 CRUISE SHIP BERTHS	SHORE POWER	GROUND TRANSPORT

THE PIER

Completed in 1985, Canada Place with its iconic five Teflon-coated fiberglass sails is Vancouver's premier cruise ship terminal. Situated on the site of the former Pier B-C, it welcomes over 900,000 passengers and around 290 ship calls each year. On the landside, Canada Place can be reached via the SkyTrain line at the nearby Waterfront Station terminus or the road network via Canada Place (surface level) or Waterfront Road (underground level).

Canada Place is also home to the 466,500 sf (43,340 sq m) Vancouver Convention Centre, the 503-room Pan Pacific Vancouver Hotel, and the corporate offices of the Vancouver Fraser Port Authority (Port of Vancouver) and Vancouver World Trade Centre. In 2001, the pier was enlarged to a total length of 1,490 ft (455 m) so as to accommodate another cruise ship berth resulting in a three-berth terminal that can service up to four luxury cruise ships at one time.



SITE OF TWO ROYAL VISITS

On March 9, 1983, Queen Elizabeth II, accompanied by Prince Philip, Duke of Edinburgh, The Right Honourable Pierre Trudeau, Prime Minister of Canada and The Honourable William R. Bennett, Premier of British Columbia, initiated the first concrete pour in a caisson located at the southeast corner of Canada Place. [xxii] The Royal Couple had arrived on the *HMY Britannia* from Victoria that morning, mooring at Pier B-C, steps away from the construction site. After a busy itinerary in Vancouver which include inviting the world to Expo 86, the Queen hosted 56 dinner guests onboard the Royal Yacht that evening followed by a reception for 240 guests. The following morning, the *Britannia* departed for Nanaimo with the Royal Couple aboard as part of their four-day West Coast tour.[xxiii]

Three years later during Expo 86, Prince Charles, Prince of Wales (today King Charles III), accompanied by the late Diana, Princess of Wales and The Right Honourable Brian Mulroney, Prime Minister of Canada, officially opened the Canada Pavilion at Canada Place on May 2, 1986 with a ribbon-cutting ceremony.[xxiv] Among the largest and most elaborate pavilions presented by any nation at any World's Fair, the Canada Pavilion hosted more than 5 million visitors in the six months that led to the October 13, 1986, closing date. The Canada Pavilion has been acknowledged as one of the best-ever host nation pavilions at a world exposition.[xxv]

SHORE POWER

In 2009, a shore power initiative was completed at Canada Place enabling cruise ships to connect to the shore-based electrical grid while docked - a significant environmental initiative at the time as it was the first installation of this type in Canada, and only the third in the world.

In Vancouver, electricity primarily comes from low-emission hydroelectricity supplied by BC Hydro. Shore power enables ships to shut down their diesel-powered auxiliary engines and plug into land-based electrical power, thereby significantly reducing emissions of air pollutants and greenhouse gas emissions while also reducing engine noise. Shore power requires a number of conditions to be met that affect whether a ship can plug in, including availability of terminal facilities, configuration of a terminal's shore power equipment, the location and limitations of the ship's shore power equipment, and the availability of power from BC Hydro.

In 2013, an additional shore power jib, or connection point, was installed to further facilitate connections. Today, the Port continues to take the lead in making shore power connections available at Canada Place and other marine terminals. It also offers incentives to shipping lines such as discounts on harbour dues for shore-power enabled vessels.[xxvi]

Celebrity Cruises *MS Celebrity Infinity,* Crystal Cruises *MS Crystal Serenity*, and Holland-America Line *MS Zaandam* docked at Canada Place on July 3, 2016. In the background are (L-R) SeaBus Station, CPR / WestCoast Express and Waterfront Station.
(VFPA 038-3-4267, Photographer – William Jans)

The Holland-America Line's cruise ship *MS Zaandam*
docked at Canada Place in 2012.
(VFPA 038-3-42587, Photographer – John Sinal)

HMY Britannia carrying Queen Elizabeth II and Prince Philip arrives from Victoria, BC
as people line the walkway to catch a glimpse of the vessel on March 9, 1983.
(The Canadian Press, Photographer – Nick Didlick)

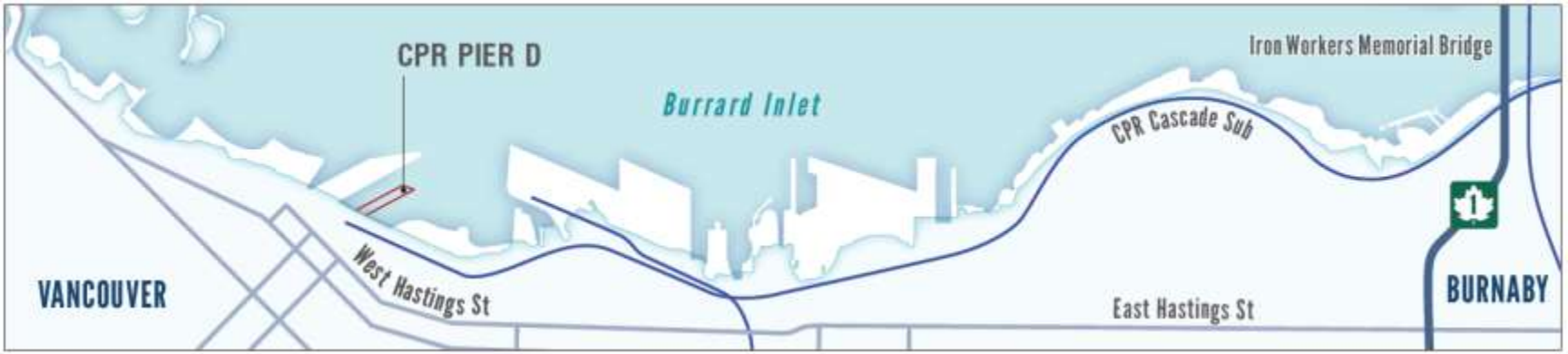
Canada Place's shore power jib providing land-based electrical power
to the cruise ship *MS Island Princess* on July 4, 2012
(VFPA 038-3-9062)

CPR PIER D (1914-1938)

1 FREIGHT SHED	2 DEEP SEA BERTHS	2 RAILWAY SIDINGS

THE PIER

Located at the foot of Granville Street, construction of Pier D was started in 1913 as part of the CPR's Vancouver expansion (1910-15) which included new railway equipment, rail yards, ships, and the second Hotel Vancouver. Built in the "New York" pier style and opened in 1914, the large wooden dock was used by CPR coastal steamers which served Seattle, Victoria, and Alaska. After being lengthened another 500 ft to 900 ft in 1917, Pier D became the terminal for outbound *Empress*-class Royal Mail Steamers.[xxvii] The pier included a two-storey building accommodating both freight and passengers as well as two railway sidings connected directly to the CPR mainline.[xxviii] In order to avoid crossings at grade over the freight yard tracks between the city and CPR piers and wharves, two steel viaducts were constructed over the tracks. Ramps led down to wharf level. They also led directly to large waiting rooms with ticket and baggage counters on the upper deck along with company offices. Passengers with hand or other baggage could have the same taken care of on the upper deck. Transfer wagons brought baggage in bulk to the lower deck which was connected by lifts and stairways to the waiting rooms above. The larger portion of the lower deck was devoted to freight, the movement of which was facilitated by gangways of the elevator type, thus minimizing the labour of loading, and unloading.[xxix]



BIG PILE DRIVER

The biggest pile driver, for height, seen in Vancouver to date (January 1917) was brought alongside CPR Pier D. At a height of 120 ft (37 m), it was used to drive the piles which formed the foundation for the extension of Pier D. Owing to the depth of water, piles from 90 to 100 ft (27 to 30 m) were used and the new pile driver was constructed especially for this purpose. S. Doe's pile driver dwarfed ordinary pile drivers of the time and was fitted with air pipes and other accessories.[xxx]

VANCOUVER'S "MOST SPECTACULAR" FIRE

On Wednesday, July 27,1938, Pier D and adjoining Freight Shed 3 burned down to the waterline in Vancouver's most spectacular fire, drawing huge crowds.

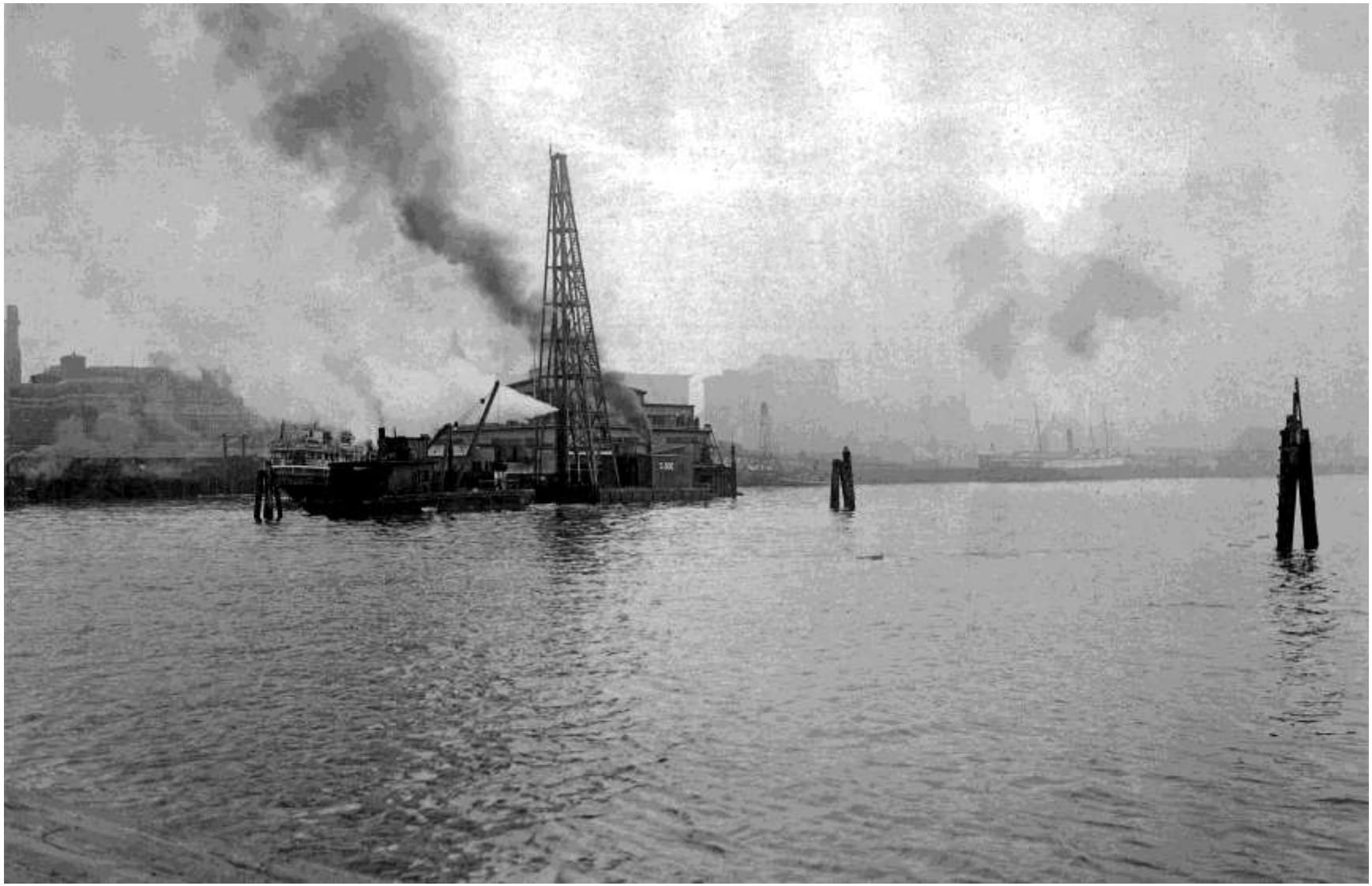
The blaze started on a hot July afternoon. Per daily practice during the dry weather, the wooden deck of Pier D had been hosed down two-and-three-quarter hours yet the fire was discovered by a longshoreman. Upon hearing the longshoreman's shouts, CPR police rang in the alarm at 1:40 p.m. and reported that the fire was coming from under the pier at the northwest end and had an oily smell.

A general alarm summoned every piece of fire fighting equipment to the scene. The vast column of dirty brown, black smoke billowing high into the air attracted thousands of people to the waterfront. Police were rushed to the scene to keep people well behind the fire lines as fire fighters had a difficult job in reaching the scene due to the huge crowds. A fleet of trucks was summoned to cart away the company files and records housed in the general offices on the pier proper. Switch engines were rushed down to the yards to haul away the great lines of box cars that nestled close behind the docks.[xxxi]

It was reported that within five minutes, flames were shooting at least 100 ft into the air at the front of the pier. Three quarters of an hour after the fire started, the heaviest flames were coming from the entrance to the pier. Flames were visible at the north end of the pier. In the middle, the flames were more or less concealed from view, but at the southern end, they were burning furiously. But CPR Pier D was gone.[xxxii]

The British Columbia Coast Steamships' pocket liners *SS Princess Adelaide* and *SS Princess Charlotte* were moored at the pier with the *Charlotte* directly in the path of the flames. Her engines were cold and she had very little steam as the *Charlotte* was not due to sail until 9 p.m. that evening. Captain T. Rippon, the CPR Marine Superintendent rushed aboard with a makeshift crew of stewards, deckhands, and longshoremen. The "shanghaied" crew laboured in the stokehold while the flames rapidly drew closer to the ship's stern. The crew was able to cast off the lines and take the ship to safety but not before one of the lifeboats caught fire. Fortunately, the deck crew extinguished the flames and Capt. Rippon and his crew were able to get the *Charlotte* away safely and moved her to the Union Steamship Dock. The *Adelaide*, on the west side, managed to also move away safely and cruised about the harbour.

No fatalities were reported. However, 10 persons, including two firemen, suffered burns or other fire-related injuries. At least four other firemen had to jump into the water to escape the flames. Only thirty tons of freight - valued at $2,500 - was lost. In addition, one City fire engine and 1,500 ft (460 m) of fire hose, valued together at $13,000, fell prey to the flames. Estimated to cost $1.2 million to replace, the pier was never rebuilt.[xxxiii]



Progress photograph of the CPR Pier D extension construction. View is looking south and shows the S. Doe pile driver, the floating derrick *Skookum*, and the CPR *SS Princess Victoria*.
(Vancouver Archives, CVA 152-1.237, H.A. Price family collection)

From left to right, the extended CPR Pier D with a *Princess*-class pocket liner and an *Empress*-class ocean liner, fright sheds 6 and 7 with the 50-ton derricks in between, the adjacent railway yards at the foot of Granville Street, and Waterfront Station in 1924.
(Vancouver Archives, CVA LGN 1061)

View of CPR Pier D on fire with the crowd watching the blaze from the viaduct after the wind shifted towards CPR Pier B-C on July 27, 1938. (Vancouver Archives, CVA Can P187, Major Matthews collection)

CPR Pier D burnt down to the waterline, and the ashes of Freight Shed 6
with CPR Pier B-C and the *SS Princes Charlotte* in the background on July 28, 1938.
(Vancouver Archives, CVA 447-187, Photographer – Walter E. Frost)

JOHNSON WHARF | CPR PIER H (1907-1978)

3 FREIGHT SHEDS	2 DEEP SEA BERTHS	1 RAILWAY SIDING

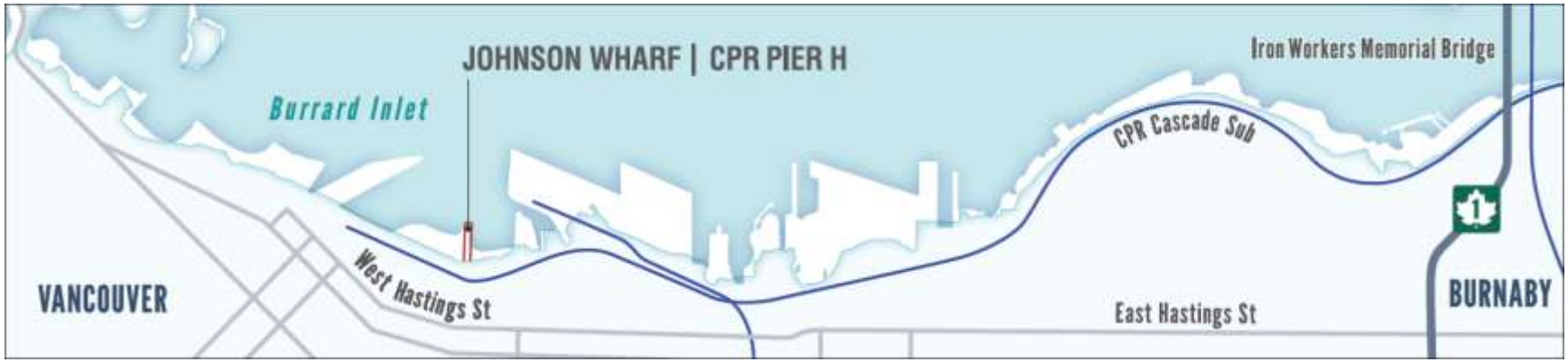
THE PIER

Johnson Wharf is named after Captain C. Gardner Johnson (1857-1926), a Scottish mariner who arrived in Vancouver in 1885 to open the City's first shipping and insurance agency in 1886.

Located at the foot of Carrall Street, the $60,000 Johnson Wharf was constructed in 1907. The 1,020 ft (310 m) long finger pier was built using specially treated teredo-proof wooden piles costing $10,000 and included a 300-by-50 ft (90-by-15 m) single storey freight shed. A railway siding ran out the full length of the pier and flanked the freight shed on the east. Two other large freight sheds (130-by-30 ft (40-by-9 m) and 100-by-30 ft (30-by-9 m)) were also constructed.[xxxiv]

In May 1920, the CPR cancelled the Johnson Wharf Co.'s lease so that its ocean steamers could use the then renamed CPR Pier H. The CPR found it impossible to berth its vessels elsewhere while its new pier was being constructed.[xxxv]

Eventually, the pier would be dismantled to make way for the new Centerm container terminal.

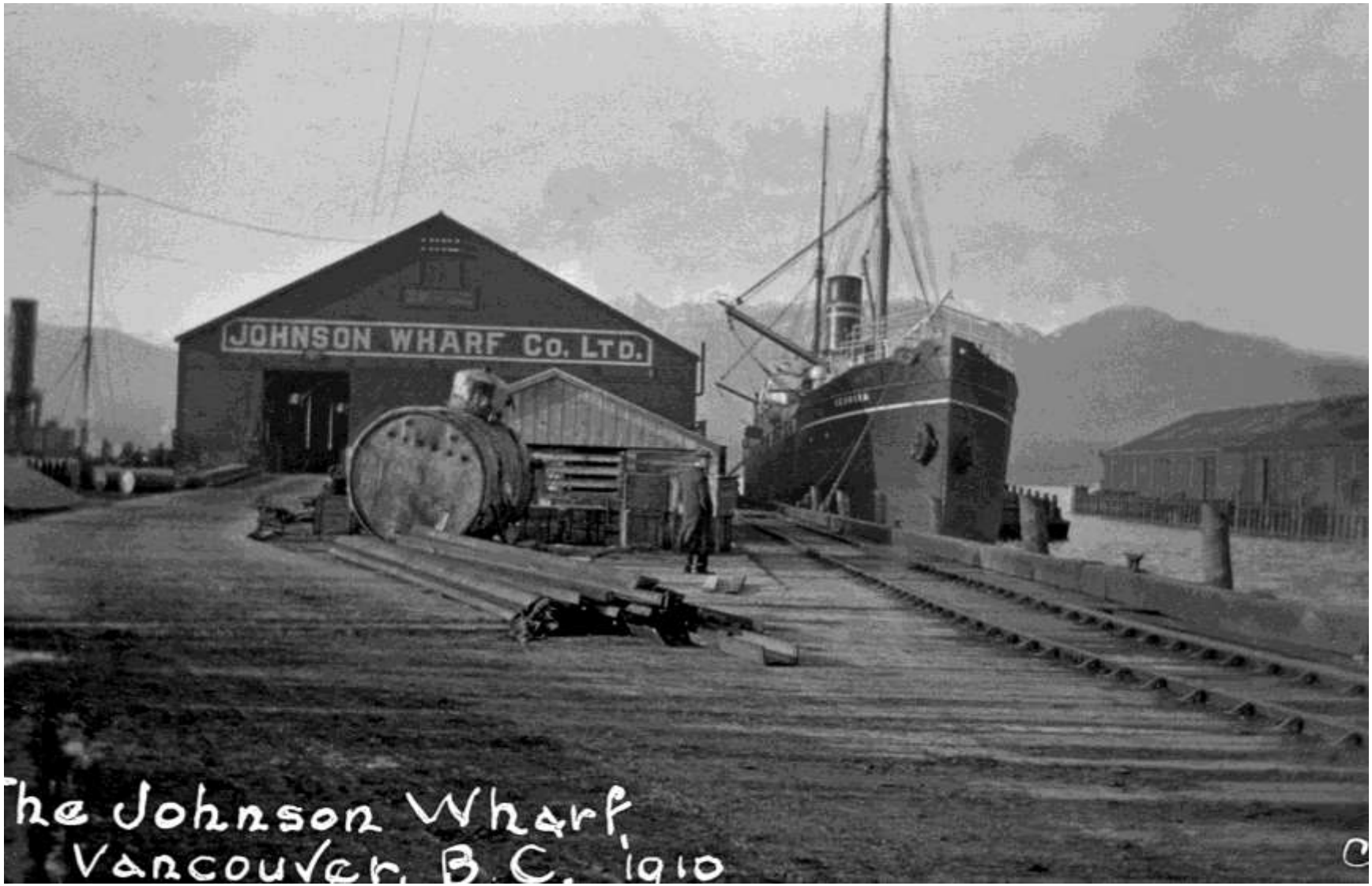


SIXTH REGIMENT WILL INVADE THE UNITED STATES

This February 20, 1909, Vancouver Daily World headline announced that the 6th Regiment, Duke of Connaught's Own Rifles, armed and in full uniform, would travel by steamship to Seattle to participate in a grand military display at the Alaska-Yukon-Pacific (A-Y-P) Exposition on the weekend of August 20-22, 1909.

Six months later, Lieutenant Colonel F.W. Boultbee commanded the Adjutant, Captain H.D. Hulme to order the regiment, staff, bugle corps and brass band to parade at the Beatty Street Drill Hall on Friday, August 20th at 7 p.m. That evening, after being issued Magazine Lee-Medford rifles complete with bayonets under the watchful eye of Quarter Master Sergeant F. Kennedy, Regimental Sergeant Major H. Heritage inspected the soldiers in their khaki Service Dress with field service caps and white Universal pattern helmets. Haversacks containing towel, soap and brush were also worn along with grey blankets carried en banderole over the right shoulder. Led by its bands sounding their bugles to clear the way, the Regiment marched out the massive front doors of the Drill Hall in column of route, wheeled right on Beatty Street and carried on down to the Johnson Wharf. Here at the foot of Carrall Street, the Regiment filed aboard the iron-hulled *SS Rupert City*. The Regiment was accompanied on its 120-mile journey south to Seattle by the 18th Field Ambulance (Officer Commanding - Captain F.C. McTavish), No. 101 Vancouver High School Cadets (Officer Commanding - Captain R.N. Davey) and the Vancouver Pipers' Society band (Pipe Major H. MacKenzie).

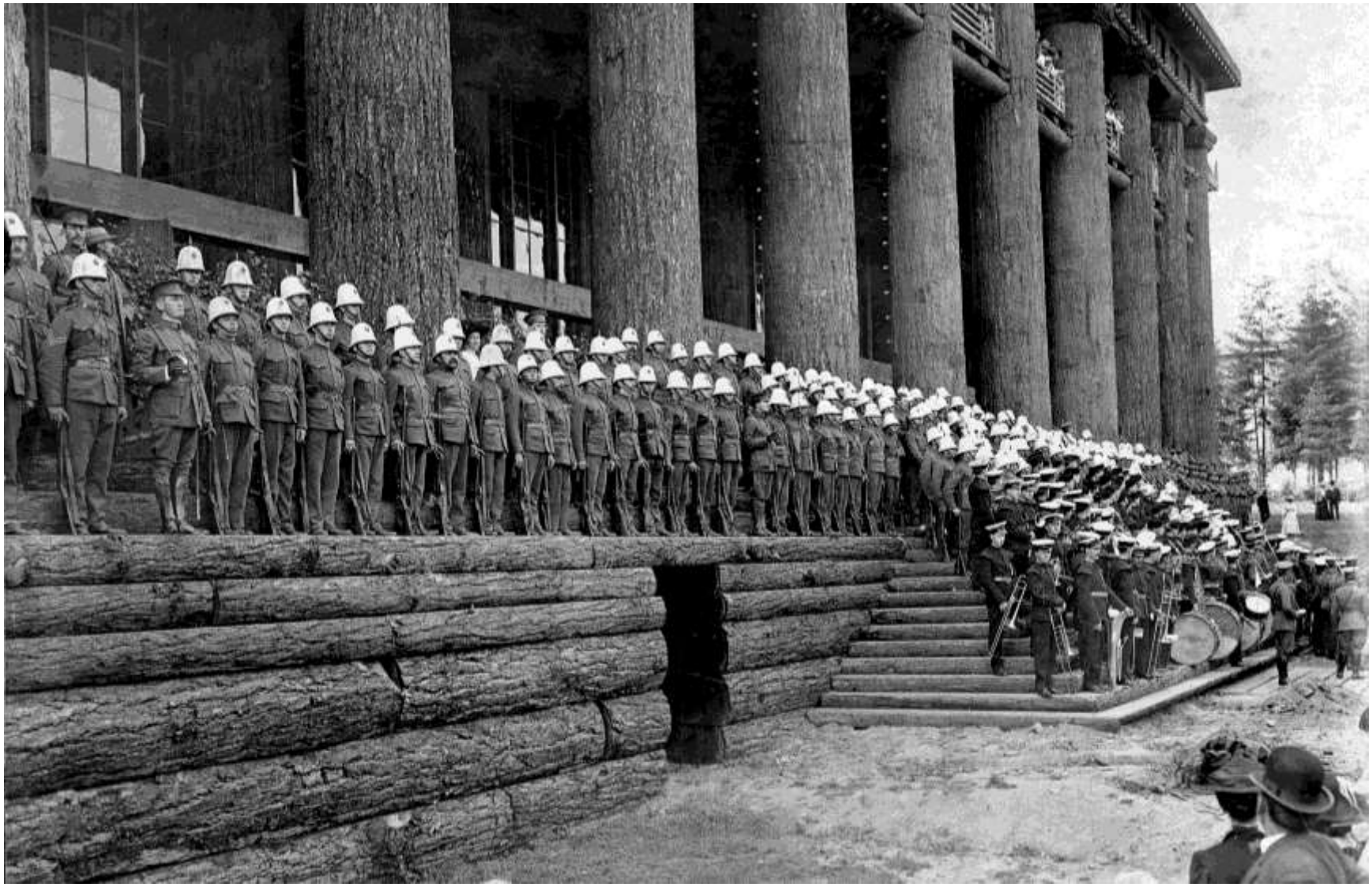
Loaded to the gunwales with over 500 men in uniform and 200 civilians, the 310-foot-long steamship set off for the Emerald City after Captain D. Mackenzie gave the order to cast off at 8 p.m. The men were quartered between the decks of the 23-year-old vessel while the officers were provided accommodations in the ship's cabins. Impromptu concerts took place mid-deck and were reported to be of a highly entertaining character. They lasted until "lights out" sounded below and then continued on the upper deck. That first night, the Orderly Officer, Lieutenant J.S. Matthews proceeded with a sergeant to the hold of the ship to see that lights out was observed and first "met" Lieutenant Colonel J.W. Warden, D.S.O., O.B.E. who would later raise the 102nd (Northern British Columbia) Battalion, Canadian Expeditionary Force. In the darkness, there was a candle burning. The sergeant called out, "Put that light out." An answer came out of the night, "I can't find my blankets." Lieutenant Matthews asked the sergeant, "Who's that fellow?" The sergeant replied, "His name's Warden, a private."[xxxvi]



SS Georgia of the Canadian-Mexican Line discharging cargo at Johnson Wharf in June 1910 before being laid up. [xxxvii]
(Vancouver Archives, CVA Can N43, Major Matthews collection)

The *SS Rupert City* in Vancouver in 1913.
(BC Archives, B-01255, Photographer – H. Bullen)

Vancouver, B.C. Arch - Seattle celebrates Vancouver Day along with the brass and bugle band of the 6th Regiment, The Duke of Connaught's Own Rifles on August 21, 1909.
(City of Vancouver Archives, CVA AM427-S4-289-024, Photographer - Pierson and Company)



Group portrait on the steps of the Forestry Building at the Alaska-Yukon-Pacific Exposition on August 21, 1909, showing the 6th Regiment, The Duke of Connaught's Own Rifles; 18th Field Ambulance, Canadian Army Medical Corps; and No. 101 Vancouver High School Cadets.
(City of Vancouver Archives, CVA Mil P132.2, Photographer - F.H. Nowell)

EVANS, COLEMAN & EVANS DOCK (1888-1944)

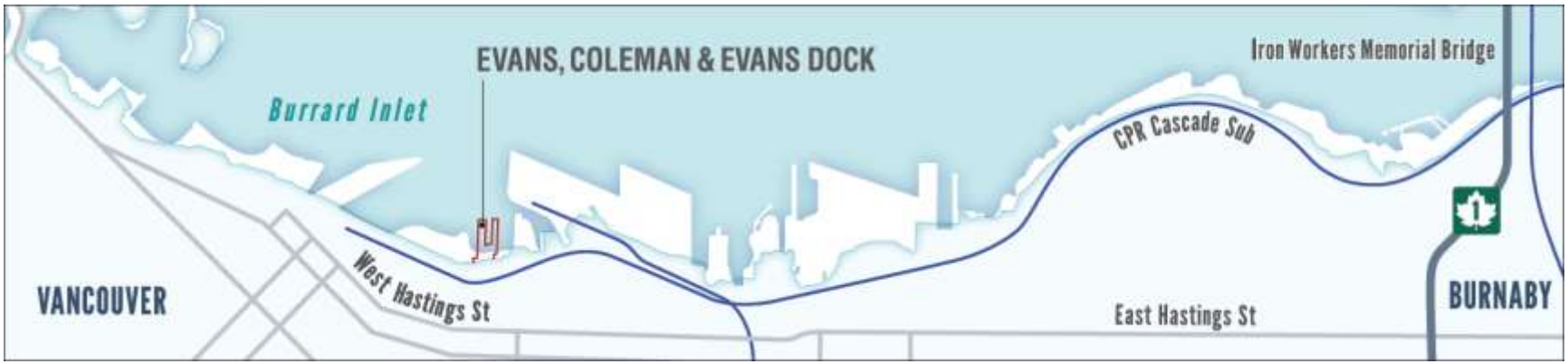
9 FREIGHT SHEDS	4 DEEP SEA BERTHS	1 RAILWAY SIDING	2 FUEL BUNKERS

THE PIER

One of Vancouver oldest piers, the first of the two 700-by-100 ft (210-by-30 m) Evans, Coleman & Evans Docks was constructed in 1888 by the two English brothers Percy and Ernest Evans and their cousin, George Coleman, who partnered together to conduct business as "general merchants, shipping agents and wharf owners".

The company began on a small scale, using the single pier to receive coal from Vancouver Island, and then sell that coal on the lower mainland. In 1889, the steam tug *Tepic* was purchased to tow logs and log booms for lumber companies. That led Evans, Coleman & Evans, Ltd. into selling lumber as well as coal, which, in turn, led the company into "a gradual building up of a trade for the supply of builders' materials" including concrete.[xxxviii] From its beginnings at the foot of Columbia Street, the dock ultimately expanded to two finger piers, nine freight sheds, and coal bunkers (to refuel steamships). A single railway siding provided access to the inside basin of the western pier.

Later as part of Ocean Cement Ltd.'s holdings, the pier was also dismantled to make way for Centerm.



CRASH OF THE GARONNE

Shortly after the wharf was built, the 3,876 GRT, 382 ft long *SS Garonne* of the American-British Steamship Company crashed into the Evans, Coleman & Evans Dock after arriving from Victoria on June 1, 1899, whilst on her way to St. Michael, Alaska. Her master (Captain Conradi) reported that the big steamer's engines refused to obey the signals from the bridge. Consequently, even though Capt. Conradi ordered the dropping of the forward anchor, the ship failed to stop in time and her bowsprit tore away the upper part of the main wharf shed and was actually halfway through the building. The ship ended up taking out 50 ft (15 m) of dock and shearing off the warehouse roof. [xxxix]

FINE DISPLAY BY CZECH0-SLOVAK LEGION

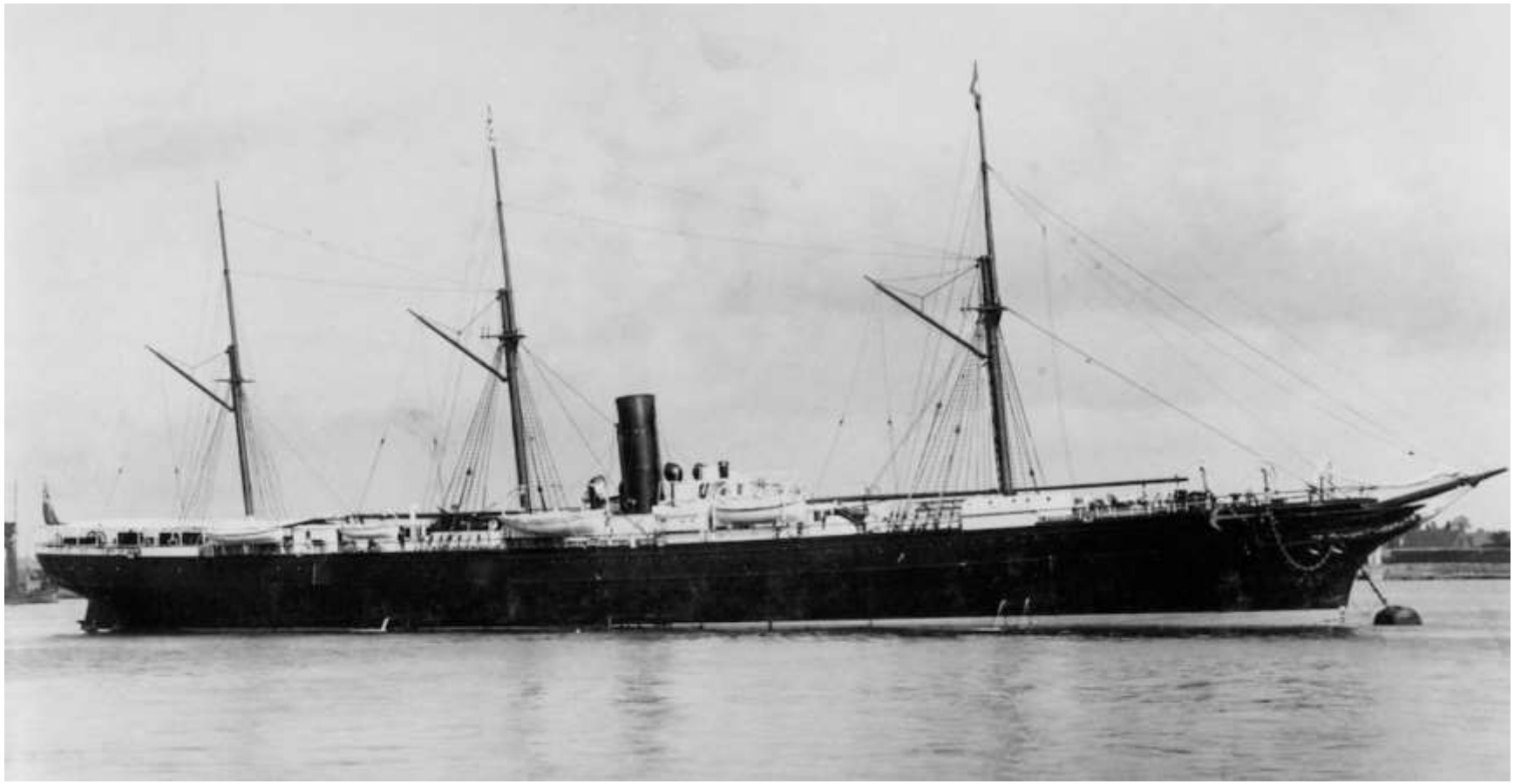
On Sunday, June 6, 1920, the first of more than 9,000 Czecho-Slovak troops to pass through Vancouver on their way from Siberia to their homes in Bohemia left for Valcartier, QC on five Canadian National trains. The 2,945 strong vanguard, off the Blue Funnel liner *SS Ixion* (Master – Captain J. Inkster) which berthed at the Evans, Coleman & Evans Dock; marched through the city centre towards the Canadian National Station clad in long greatcoats, with rifles, sidearms and metal helmets. In the line of march was a detachment of engineers, the First Horse Battery of artillery, the Seventh Regiment of infantry and the Storming battalion. The latter were reportedly particularly smart in appearance as each legionnaire carried a business-like curved sword with a wrought brass hilt and a worn but be-tasselled leather scabbard. Many wore medal ribbons, indicating they had been decorated for bravery in battle. Four Russian bears, mascots of the different regiments, accompanied the soldiers.[xl]

After the vanguard, the main body (2,699 soldiers on the *SS Protesilaus* also at the Evans, Coleman & Evans Dock) and rear guard (3,400 soldiers on the *SS M.S. Dollar* at the Great Northern Dock) arrived on June 21st and 23rd, respectively.[xli]

DANGEROUS DOCK FIRE CONTR0LLED

Fast action by city firemen and the Vancouver fireboat were reported to have averted a major waterfront blaze on the afternoon of July 18, 1956, when a three-alarm fire occurred at the Evans, Coleman & Evans Dock. Flames had broken out at 5 p.m. on the west side of the warehouse at a point halfway down its length and were discovered by the watchman on duty. Thirteen pieces of equipment and more than 50 firemen rushed to the scene. *Fireboat No. 2* arrived shortly after receiving the alarm and directed streams of water underneath the deck. The warehouse housed small quantities of lumber, pulp, and plywood, which were not damaged, fortunately.[xlii]

Evans, Coleman and Evans, Ltd. buildings and warehouses between 1940-1948.
(Vancouver Archives, CVA 1184-1876, Photographer – Jack Lindsay)



Flying a Red Ensign, a starboard side view of the SS Garonne moored to a buoy by her anchor chain.
(Maritime Museum of BC, P915.01, Photographer - Major F.V. Longstaff)

SS Ixion of the Blue Funnel Line with troops of the Czecho-Slovak Legion at the Evans, Coleman & Evans Dock on June 6, 1920.
(Vancouver Archives, CVA Mil P101.1, Major Matthews collection)

Vancouver Fireboat No. 2 and firefighters at the Evans, Coleman & Evans Dock with the Kingcome Navigation tug, *St. Faith* in the background on July 18, 1956. (Vancouver Archives, CVA 354-169, Photographer - William J. Dennett)

HASTINGS MILL (1868-1928)

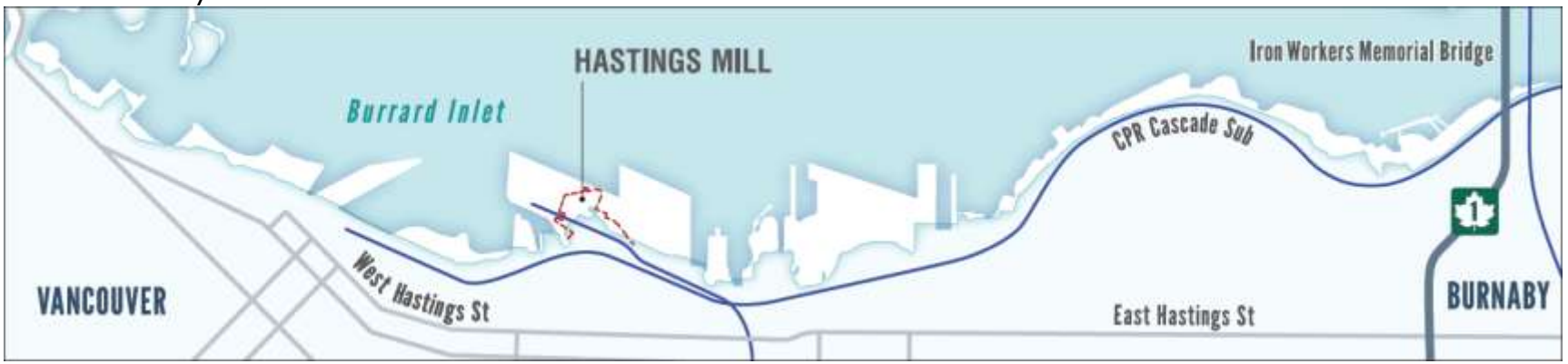
16.2 ACRE SAWMILL	5 LUMBER SHEDS	4 DEEP SEA BERTHS	2 RAILWAY SIDINGS

THE WHARVES

In 1865, Captain Edward Stamp established the British Columbia and Vancouver Island Spar, Lumber and Sawmill Company, renamed the Hastings Sawmill Company, or Hastings Mill in 1870. Predating Vancouver's incorporation in 1886, this small commercial operation on the South Shore morphed into a lumber port, exporting lumber to the world markets. In fact, some of San Francisco's great homes were reportedly built from lumber milled at Hastings Mill.[xliii] Unfortunately, this came at a price as the Squamish community of *Kumkumlye*, adjacent to the sawmill townsite, was gradually assimilated and ultimately demolished. [xliv]

Acquired by lumberman John Hendry in 1889, the mill remained until the First World War, Vancouver's largest industrial enterprise. In 1919, on the occasion of the Royal Visit by Prince Edward, Prince of Wales (later King Edward VIII), it boasted "peak production".[xlv]

Sixty-three years after beginning operations, the mill's saws stopped spinning when the Hamber-Hendry family sold the Hastings Mill land to the Vancouver Harbour Commission. In 1928, the mill was dismantled and its equipment dispersed to smaller operations across the continent.[xlvi]



LOADING LUMBER AND SPARS

Until the advent of steam, traditionally-rigged sailing vessels or "tall ships" transported lumber harvested and milled in Vancouver great distances to overseas markets. Asia and Australia were over 19,700 nm (36,480 km) to the west across the pacific while the united kingdom was over 21,300 nm (39,450 km) to the east and required ships to circumnavigate cape horn as the Panama Canal would not be completed until 1914.[xlvii]

In order to efficiently load lumber, barques and schooners would dock either bow- or stern-in. This allowed longshoremen to slide huge spars directly into the ship's hold through small hatches in the ship's bow or stern negating the need to use block and tackle which would be slower and potentially more dangerous.

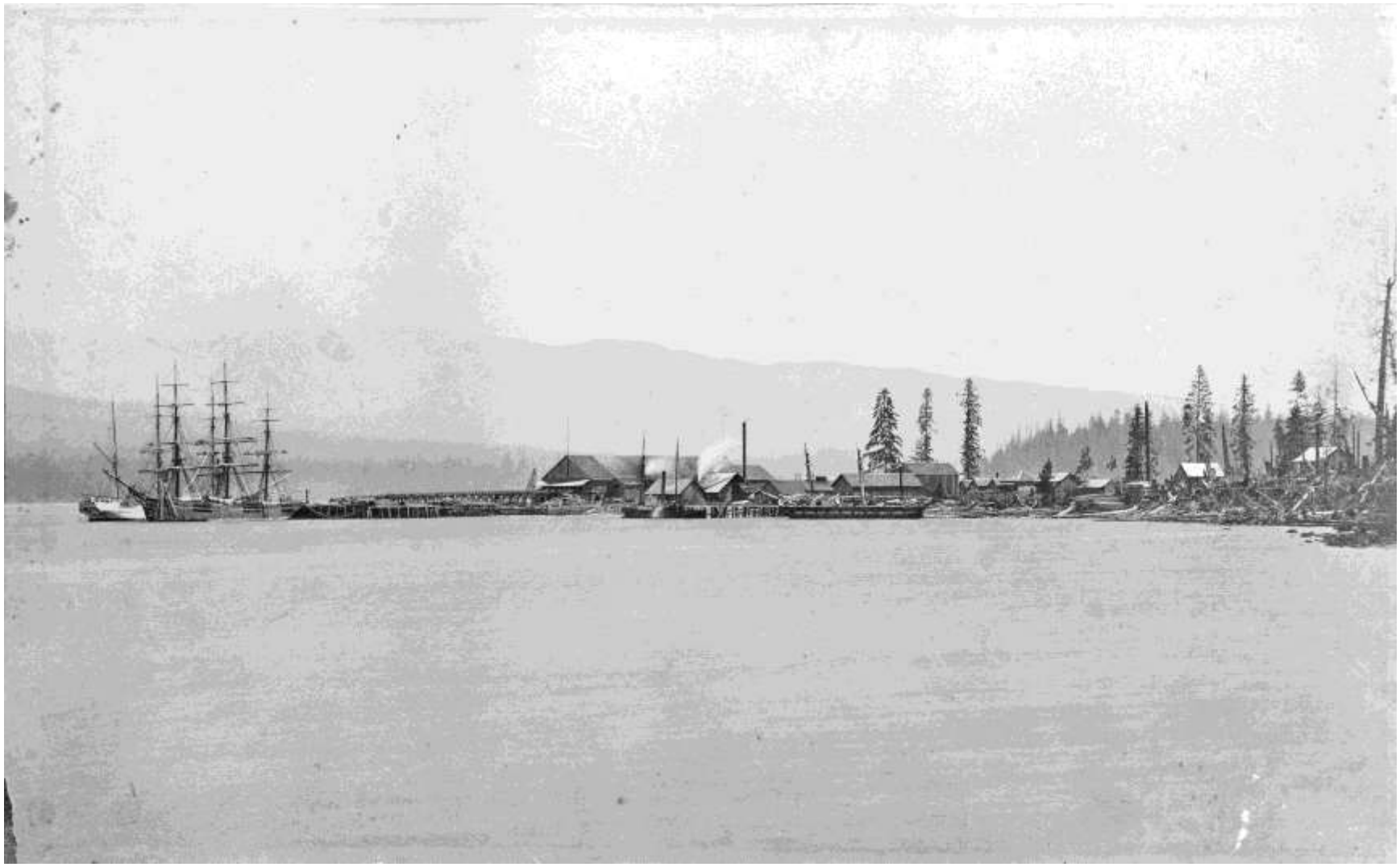
THE GREAT VANCOUVER FIRE OF 1886

On the morning of Sunday, June 13, 1886, the City of Vancouver was only two months old. The fledgling settlement comprised no more than a thousand buildings on a small pocket of land along the Burrard Inlet's south shore. By that afternoon, only three buildings still stood. The rest had burnt to a crisp in under an hour.

Logging crews had begun cutting down vast quantities of ancient-growth trees that had grown to profusion over the course of years. Timber harvesting was sweeping and irreverent. Areas once thick with forest were clear-cut to the ground to make way for the new city. Wildlife was displaced, unneeded foliage burned in smouldering slash fires.[xlviii] That Sunday morning, unwatched slash fires were stoked into roaring bonfires as the soft breeze turned into gale-force winds. Soon the whole city was awash in smoke, ash and ember. Most of Vancouver's buildings had been built with freshly-milled lumber that lit up like tinder. The city's residents had no time to pack up their lives before heading for safety.

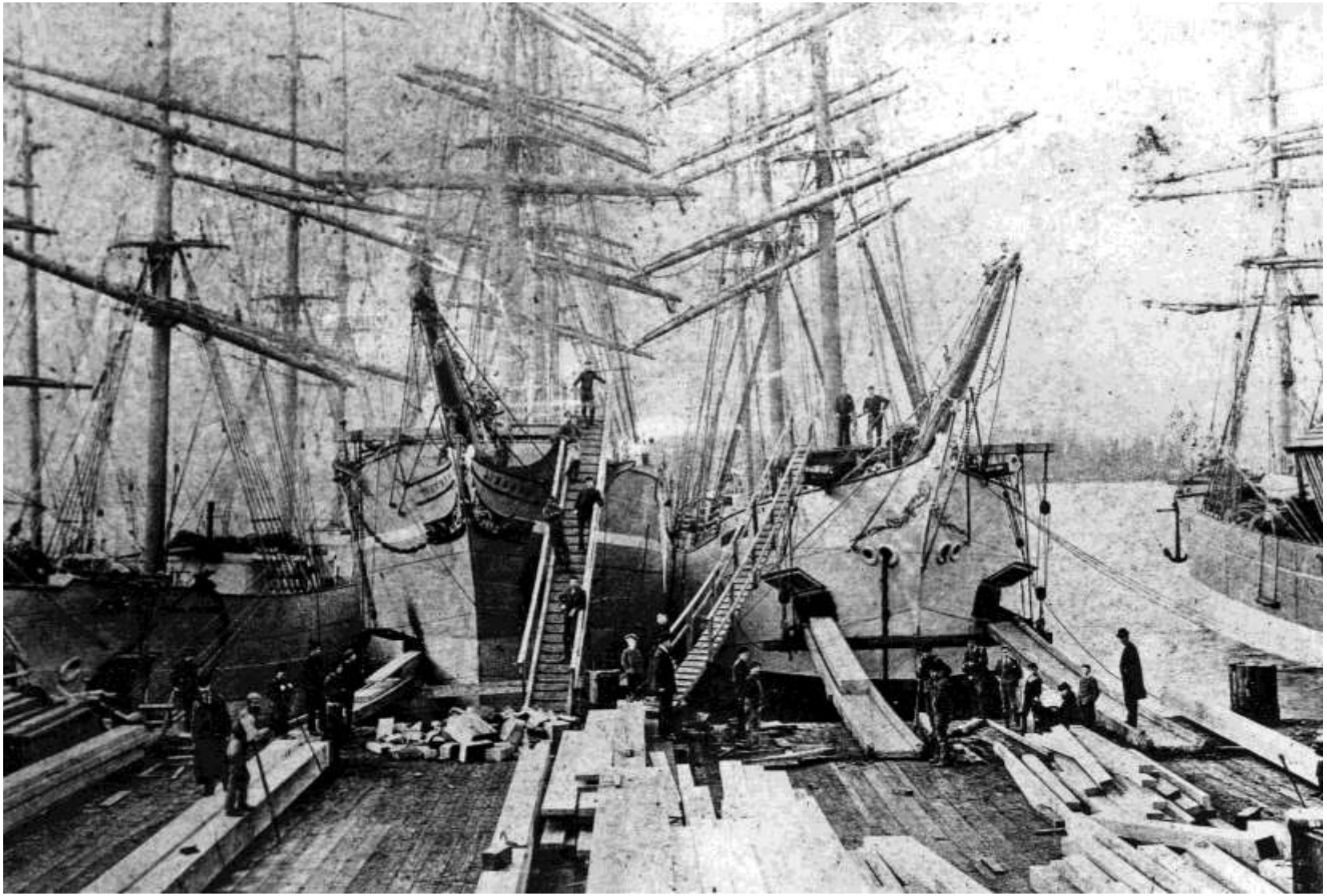
Hastings Mill, positioned obliquely to the southwest wind carrying the flames and sparks, was also protected by a large mud flat that distanced the sawmill from the blaze plus a cove of salt water that cooled most of the large flying embers that could have ignited the mill's stacks of lumber or piles of sawdust. Thus spared, the mill site became a refuge for more than a 1,000 frightened souls. The Hastings Mill Store was the only building to survive. It was used as "a haven for the frightened and excited men, sobbing women, and terrorized children," then as a hospital, and later as a morgue.[xlix]

The effort to rebuild Vancouver started mere hours after the city burned down. By morning, the skeletons of new buildings already stood amid emergency tents and lingering smoke. Weeks later, the city looked much like it had before the fire, though with considerably more brick-framed buildings. [l]



Panoramic view looking east of Hastings Mill showing tall ships, wharves, sawmills, and lumber sheds in 1872 before the Great Fire of 1886 and the arrival of the CPR in 1887.
(Vancouver Archives, CVA Mi N10, Major Mathews collection)

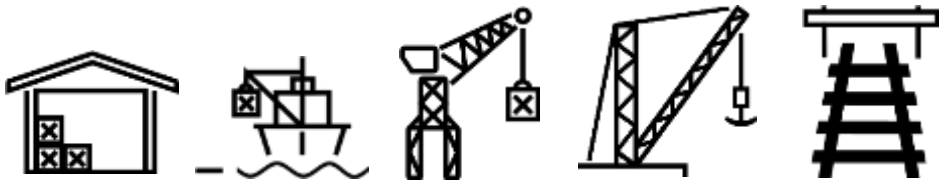
Panoramic view looking north at Hastings Mill showing a barque, the wharves, lumber sheds and sawmills, and company store in 1913.
(Vancouver Archives, CVA Mi P60, Major Mathews collection)



Lumber and spars being loaded into barques via the bow at Hastings Mill, ca. 1890.
(Vancouver Archives, CVA Mi P47 , Major Mathews collection)

The Great Vancouver Fire of 1886
(Vancouver Archives, Major Mathews collection)

CENTENNIAL PIER (1958-1970)

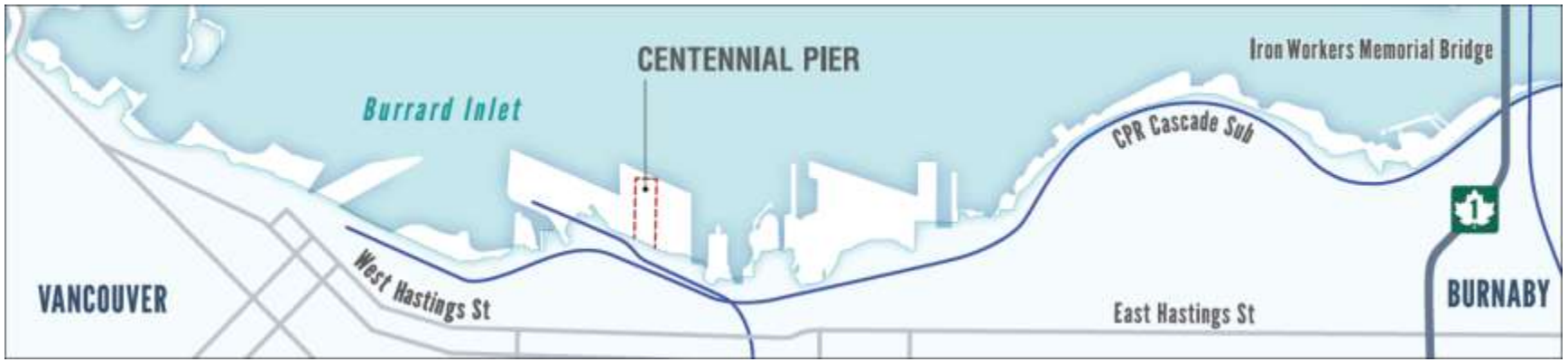


2 FREIGHT SHEDS	3 DEEP SEA BERTHS	4 SINGLE JIB PORTAL CRANES	1 HEAVY LIFT CRANE	8 RAILWAY SIDINGS

THE PIER

Centennial Pier was so named to mark BC's 1958 centennial. Construction began in 1956 and when completed two years later; the new $5 million break-bulk facility included four German-built dockside cranes with a lifting capacity of 5 tons, covered storage (Shed 2) for 200,664 sf (18,580 sq m) of cargo, and outdoor storage space for another 250,830 sf (23,255 sq m) of cargo.[li] Ten years later in 1966, Centennial Pier was further expanded through the construction of a million-dollar 97,000 sf (9,000 sq m) transit shed (Shed 1). The 506 ft (154 m) long by 191 ft (58 m) wide concrete floor was laid with steel-framed walls and roof supporting a concrete roof deck for a 250-car parkade. The Heatley Avenue overpass was extended to the car deck with pedestrian access to the pier level provided by stairs at the north and south ends. At the new Centennial Pier extension just west of the new transit shed, work included erection of a new stationary 300-ton heavy lift crane, costing about $450.000. As the heaviest crane on the Pacific coast at the time (1966), Centennial Pier handled amongst other things, the inward movement of turbine components for the Peace and Columbia River hydroelectric dam projects. [lii]

In 1970, the pier began its transformation into the South Shore's first container terminal - Centerm.[liii]



FAMED U.S. SUBMARINE PAYS VISIT

One of the oldest commissioned U.S. Navy submarines, the *USS Bluegill* (SS 242) berthed at Centennial Pier for the weekend of August 15-16, 1964, and open to the general public between 10 a.m. and 3 p.m.

A Gato-class submarine, the *Bluegill* was commissioned in 1943 and had a distinguished war career in the Pacific, sinking 10 ships for a total of 46,212 tons, including the Japanese light cruiser *Yubari*. On her sixth and final patrol in 1945, the *Bluegill's* crew swarmed ashore with sabers and small arms to capture Pratas Atoll, a Japanese radio and weather station in the South China Sea. Seven years later, the *Bluegill* was converted to a hunter-killer submarine. After her 1964 visit, *Bluegill* again saw wartime service during the Vietnam War. In 1969, she was decommissioned and scuttled off Lahaina near Maui, Hawaii for use in underwater rescue training in 1971. Finally in 1983, the ex-*Bluegill* was raised and towed to deep water where she was sunk with military honors.[liv]

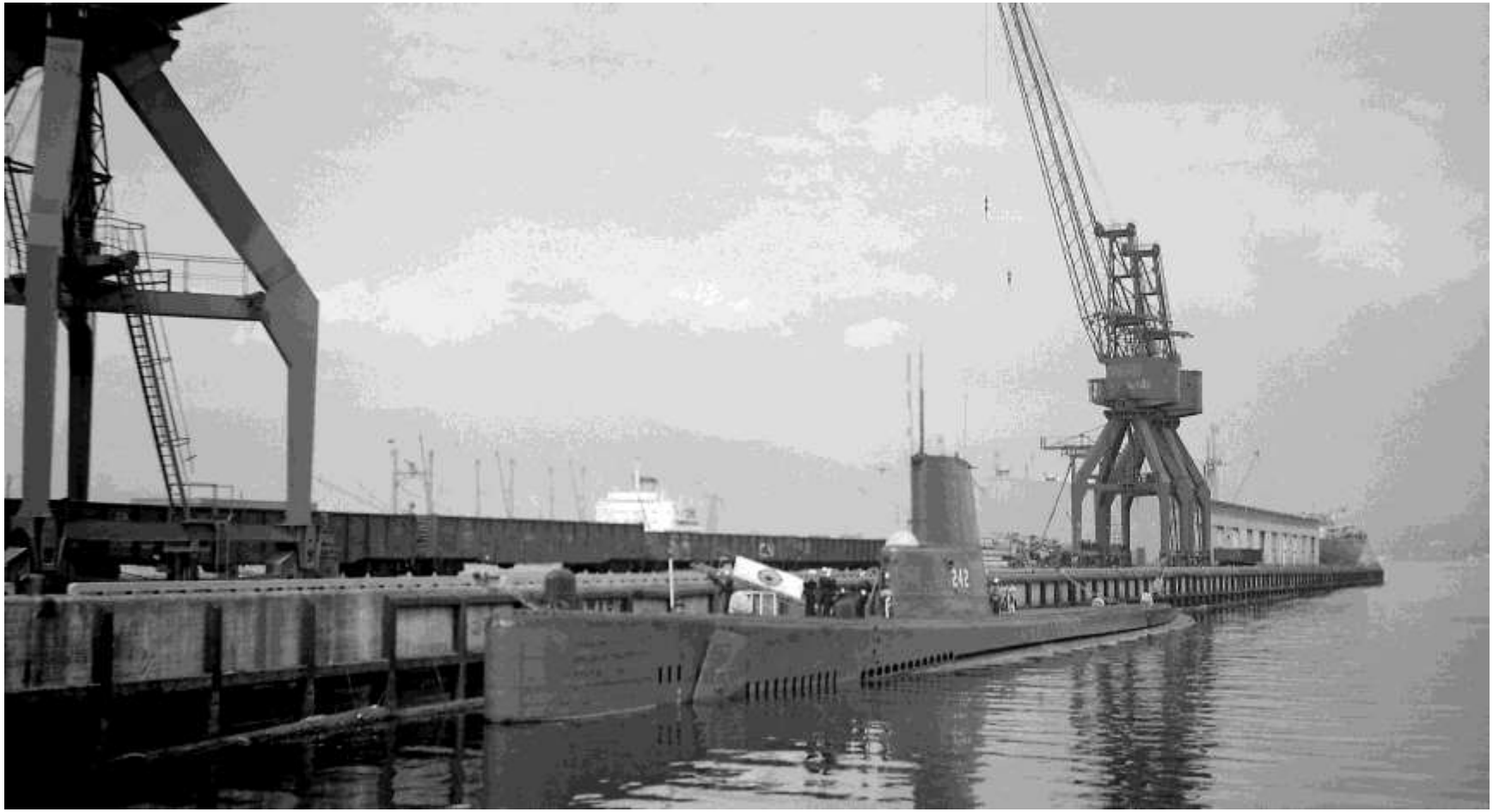
At the time of her 1964 visit to Vancouver, Lieut.-Cmdr. H.E. Robisch was *Bluegill*'s commanding officer.[lv]

MASSIVE STEEL GIRDERS FOR PORTLAND FREEWAY

In 1970, Canron Ltd. delivered on two contracts for the supply of steel to the Oregon Department of Transportation worth a combined value of $19 million. In one contract, worth $6 million, Canron completed all of the fabrication work using imported Japanese raw steel. For the second $13 million order, Japanese subcontractors fabricated complete bridge girders, which Canron tested, assembled, sand blasted, and painted at its Western Bridge Division plant on the Fraser River. The steel girders were then shipped by deep-sea barge to Portland and incorporated into the interchanges at either end of the Freemont Bridge across the Willamette River. [lvi]

On May 6, 1970, the first of a series of seven steel shipments arrived from Japan – not full cargoes but deck loads of that number. The steel was unloaded at Centennial Pier using the 300-ton heavy lift crane. The 145 ft (44 m), 90-ton curved steel beams were then trucked over city streets to Canron Ltd.'s plant. By the end of the contract, there were also six shiploads of raw steel, all together about 22,000 tons.[lvii]

Aerial view of Centennial Pier's Shed No. 2 and four single jib portal cranes in 1966 with Shed No. 1 under construction in the left foreground. (Royal BC Museum, I-21663, BC Ministry of the Provincial Secretary and Travel Industry, Film and Photographic Branch)

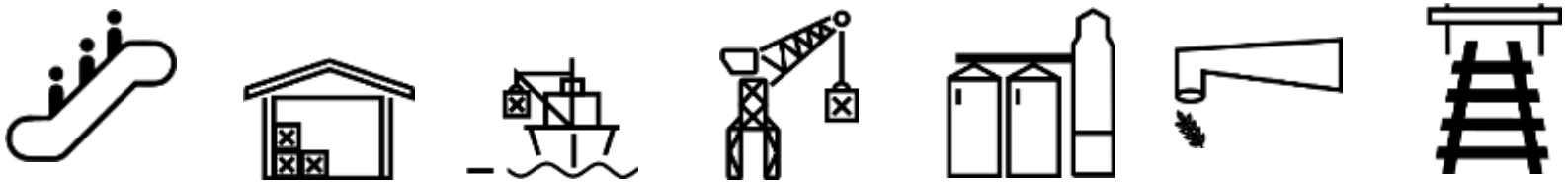


The US Navy submarine *USS Bluegill* (SS 242) berthed at Centennial Pier for general visiting on August 15, 1964.
Note the single jib portal cranes and Shed No. 2.
(Vancouver Archives, CVA 447-3616.2, Photographer – Walter E. Frost)

Centennial Pier's 300-ton heavy lift crane unloading 145 ft, 90-ton curved steel beams for use on Portland freeways from the Japanese freighter *MS Spruce* at Berth 5 on May 6, 1970.
(Vancouver Archives, CVA 134-190, Pugstem Publications)

The *MS Spruce* in Burrard Inlet on August 3, 1972, used to deliver the first shipment of massive steel beams in 1970.
(Vancouver Archives, CVA 447-8259, Photographer – Walter E. Frost)

BALLANTYNE PIER (1923-2014)



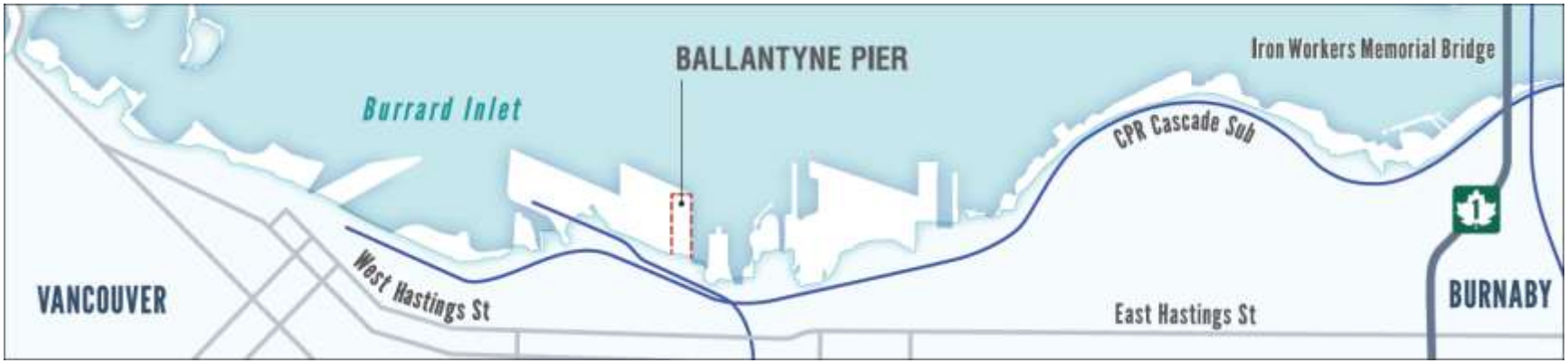
PASSENGER FACILITIES	4 FREIGHT SHEDS	5 DEEP SEA BERTHS	8 SINGLE JIB PORTAL CRANES	1 GRAIN TERMINAL	8 MOBILE SHIPLOADING CHUTES	8 RAILWAY SIDINGS

THE PIER

To help with dock shortages experienced in Vancouver after the First World War, Ballantyne Pier was constructed at the foot of Heatley Avenue for the Vancouver Harbour Commissioners (VHC) between 1921 and 1923 for a reported $4.4 million.

At opening, the pier consisted of a 1200 ft by 340 ft (365 m by 103 m) structure providing five deep sea berths. A quartet of identical freight sheds protected weather sensitive cargo. Each 2-storey fire-proof concrete freight shed was 500 ft (152 m) long and 395,000 sf (36,650 sq m) in size with its public face dressed with a "Classical Revival" masonry façade, characterized by oversized details such as cast stone quoins and round-arched windows.[lviii] Eight single jib portal cranes (four per side) aided in handling breakbulk as the cargo was moved from ship to shore or vice versa. Covered conveyor belts along each side of the pier connected VHC Grain Terminal No. 2. to the Pier's eight mobile ship-loading chutes (four per side). Railway tracks down the middle and sides of the Pier connected to the CPR tracks that parallel Vancouver's waterfront.

Ballantyne Pier was named for Canadian industrialist and politician, Charles Colquhoun Ballantyne PC, MP, and Senator (1867 – 1950).



LARGEST LOAD OF SILK EVER SENT IN ONE VESSEL FROM JAPAN

On Thursday, September 8, 1927, the Blue Funnel Line's *SS Protesilaus* docked at the Ballantyne Pier in Vancouver. She was carrying 7,400 bales of raw silk, valued at $7.4 million (i.e. $1,000 per bale).The silk traveled east in two 11-car CN Rail trains.[lix] While waiting 'in the hole' in Armstrong, Ontario for the silk train to run by; the conductor of CN's *Confederation Limited* transcontinental passenger train was quoted as saying:

> "It's the largest shipment of any one commodity to ever cross Canada – 21 cars, 28 tons to the car. Railway express charges are $9.00 a hundred pounds – a matter of about $100,000 to get the shipment to New York on a running schedule of 80 hours. This train is now 1,958 miles out of Vancouver and is 21 hours ahead of the passenger trains that left there four hours in the lead."

BATTLE OF BALLANTYNE PIER

On Tuesday, June 18, 1935, wearing his Victoria Cross and Military Medal and carrying the Union Jack, Mickey O'Rourke led a parade over one thousand locked-out longshoremen and their supporters to Ballantyne Pier to reclaim their jobs. At the entrance to the pier, notably the intersection of Heatley and Alexander Streets, the protesters were attacked by local, provincial, and federal levels of law enforcement armed with tear gas and batons. The ensuing violence lasted over three hours and has come to be known as the "Battle of Ballantyne Pier." Dozens were hurt and more than two dozen were arrested. The strike failed. Dragging on until December, the strike lost much of its militant character after the fighting at Ballantyne Pier. However, the struggle to form a union completely independent of the Shipping Federation continued for another two years, when, in 1937, the International Longshore and Warehouse Union (ILWU) Local 500 was formed.[lx]

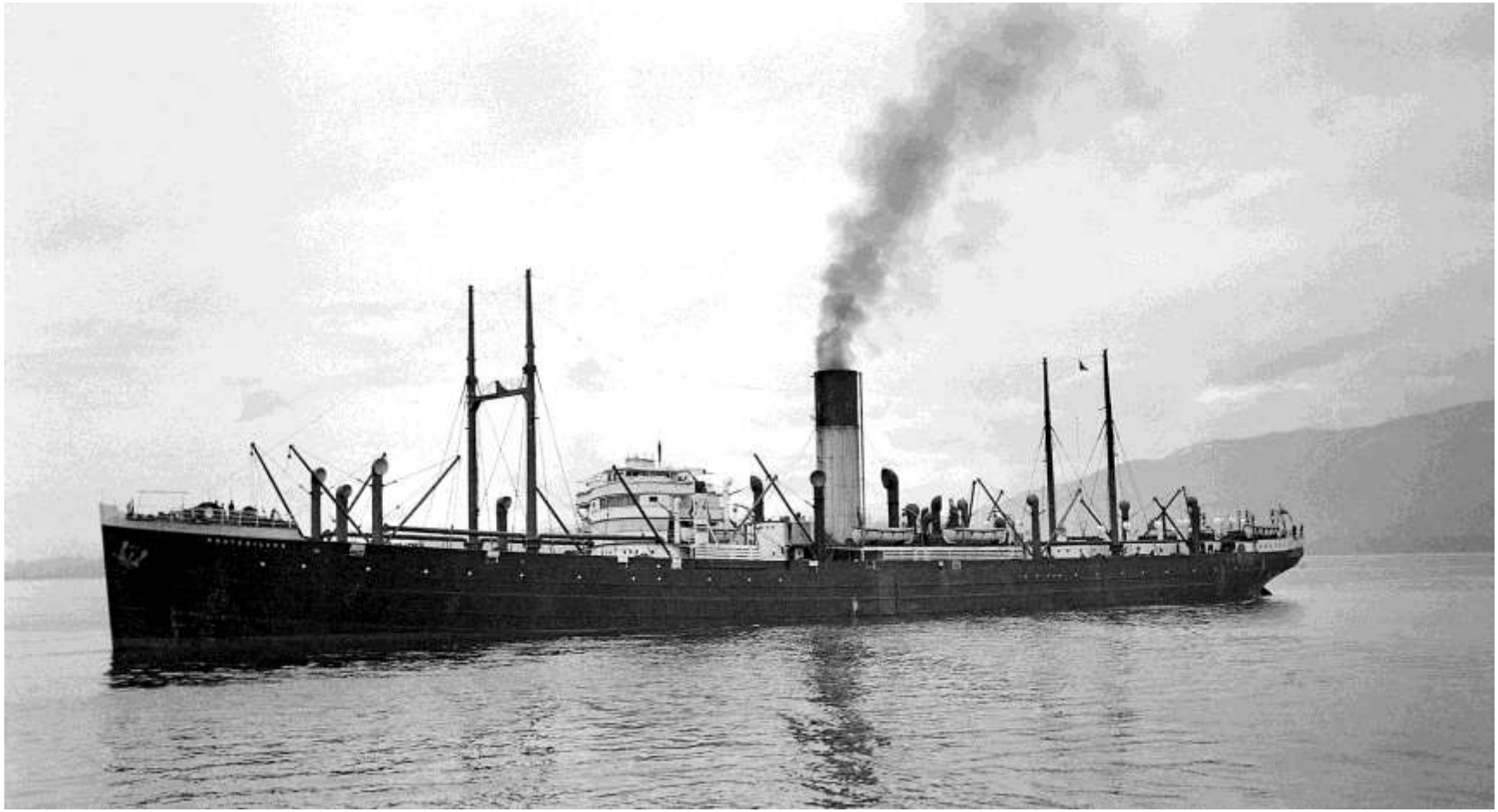
TO CATCH A WHALE

On Tuesday, July 31, 1962, the Holland-America Line freighter *SS Arkeldyk* (Capt. W.H. van Balen) moored at Ballantyne Pier. On her deck was the 39 ft. wooden trawler *'Geronimo'*, brought up from Los Angeles with the goal of capturing an orca whale for the Marineland of the Pacific oceanarium in California. The *Geronimo* carried in her holds special heavy nets, one of them 1300 ft (396 m) long. From the ship's bow, extended a 28 ft (8.5 m) boom with a pulpit at the end, from which the mammals would be lassoed after they were netted. Her master, Capt. Frank Brocato, hoped to catch a baby orca, 2,000 to 3,000 lbs (900 to 1300 kg) as they were more tractable.[lxi] Two months later, the *Geronimo* was transported back to Los Angeles aboard the Holland-America Line combi-liner *MS Dalerdyk*, unsuccessful in capturing a live orca whale after a six-week hunt in the waters of the Salish Sea and Puget Sound.[lxii]

FROM FREIGHTERS TO CRUISE SHIPS

By 1995, the then 70-year-old Ballantyne Pier was obsolete as a cargo facility and marginal as an overflow terminal for the cruise ship industry .[lxiii] The Port's solution was to redevelop the pier into a facility capable of storing and loading wood pulp on a year-round basis and handling cruise ships at two berths during the summer. Kiewit was selected to redevelop the pier, demolish the four concrete cargo sheds, install two automatic gangways, and construct a new terminal building with baggage handling and customs areas. The two-year, $23 million project involved driving 156 precast concrete piles; placing 20,000 cubic metres of reinforced cast-in-place concrete to repair existing concrete and new construction; constructing a reinforced mesh wall and a structural steel warehouse complete with roof cladding; and working on electrical and mechanical systems. At the end of 2014, the Port decided to further expand Centerm and consolidate all cruise ship operations at Canada Place.

Aerial view of Ballantyne Pier with five sea-going vessels - including two Blue Funnel Line freighters on the far side - taking on grain or discharging / loading breakbulk cargo. Note the covered conveyor belts along each side of the pier connected to VHC Grain Terminal No. 2. (Vancouver Archives, CVA Air P29.4, Major Mathews collection)



The Blue Funnel Line's *SS Protesilaus* transiting through Burrard Inlet on March 12, 1933.
(Vancouver Archives, CVA 447-2609.1, Photographer - Walter E. Frost)

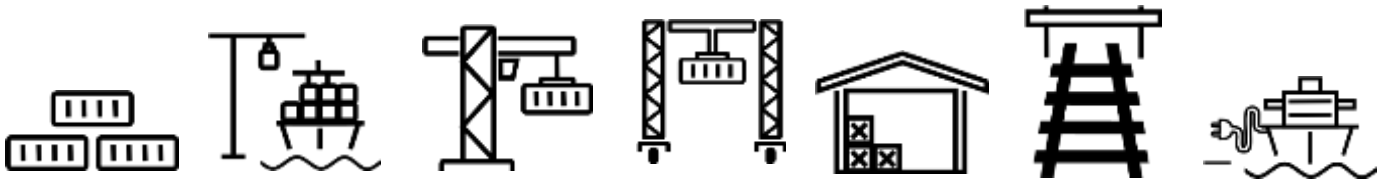
On June 18, 1935, wearing his Victoria Cross and Military Medal and carrying the Union Jack, Mickey O'Rourke led a parade of 1000 striking waterfront workers towards Ballantyne Pier. (Vancouver Archives, CVA 417-1, Photographer – W.B. Shelby)

The Holland-America Line freighter *SS Arkeldyk* at Ballantyne Pier on Tuesday, July 31, 1962.
On her deck is the trawler *'Geronimo'*, brought up from Los Angeles with the (unsuccessful) goal of capturing a baby orca whale.
(Vancouver Archives, CVA 447-3308, Photographer - Walter E. Frost)

Two of Ballantyne Pier's 2-storey freight sheds in 1985 with their public faces dressed with a "Classical Revival" masonry façade, characterized by oversized details such as cast stone quoins and round-arched windows.
(Vancouver Archives, CVA 790-0897)

Aerial view of two cruise ships berthed at the Ballantyne Pier Cruise Terminal next to the Centerm container terminal on September 19, 2004. (VFPA, Photographer - William Jans)

CENTERM (1970-PRESENT)

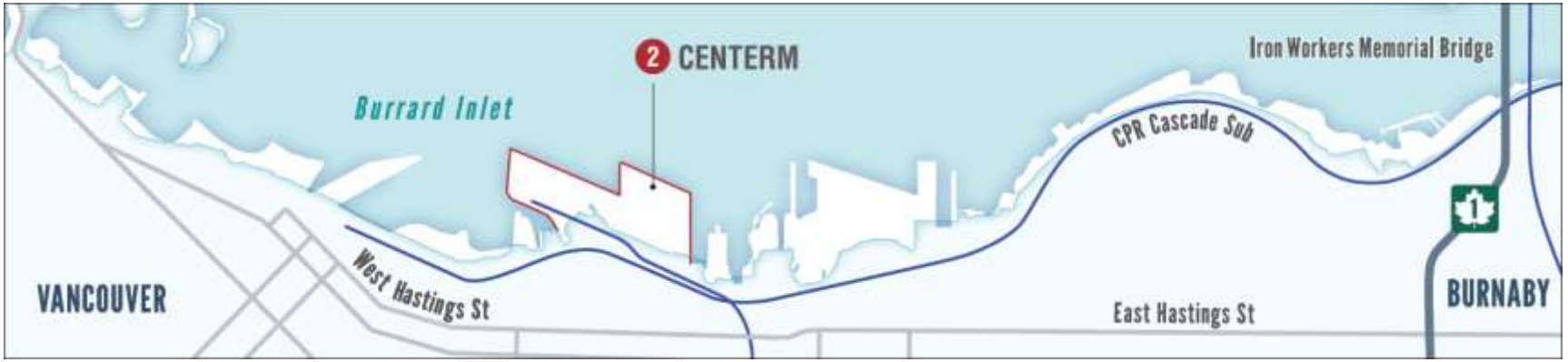


72-ACRE TERMINAL	2 CONTAINER BERTHS	7 GANTRY CRANES	19 RTG[1]	4 FREIGHT SHEDS	4 RAILWAY SIDINGS	SHORE POWER

THE WHARF

With the advent of containerization, the Port (then the National Harbours Board) through Empire Stevedoring Co. Ltd. expanded Centennial Pier from its traditional role of handling general cargo (breakbulk) to include intermodal (container) services in 1970. The $5 million Centennial Container Terminal (Centerm) initially consisted of a 687 ft-long (208 m) container berth equipped with one 40-ton diesel-electric gantry crane. At the time, the 15 ac (6 ha) landside area had three straddle-carriers and two lift trucks, each with a 30-ton capacity, to move the boxes in the yard.[lxiv] Due to quayside space limitations, trucks moved the boxes between the Centerm and CN Rail's False Creek Flats yard where they were transferred onto container railway cars. In 1983, the Port rationalized the number of berths at Centennial and Ballantyne Piers by renumbering them to Centerm Berths 1 to 11.[lxv]

Today, Centerm has expanded into a 72 ac (29 ha) site that incorporates the former Hastings Mill, rail lines, a railway depot, a marine fuelling terminal, fish processing plants, marine salvage, and tugboat operations, as well as Centennial and Ballantyne Piers. Centerm was



[1] RTG – Rubber Tire Gantry

created by depositing imported fill and dredgeate from Burrard Inlet. Consequently, the terminal extends north about 1,640 ft (500 m) from the original shoreline and is between Main Street to the west and Hawks Avenue to the east. On the south, Centerm is bounded by the CN Rail yard.[lxvi]

One of the Port's four primary container terminals, the others being Vanterm, South Fraser Docks and DeltaPort; Centerm handles about 900,000 Twenty-foot Equivalent Units (TEU) per year and has been operated by DP World Vancouver (DPWV) since 2006.[lxvii]

On October 15, 2018, Vancouver's first shore power connection with a container vessel was made at Centerm. The *MS COSCO Pacific* shut down her auxiliary engines and connected to the land-based electrical grid, reducing greenhouse gases and improving air quality. Plugged in for 24 hours, the *COSCO Pacific* saved 12 tons of CO2 from being emitted to the environment, which translates to three passenger vehicles being removed from Vancouver's roads for a year.[lxviii]

With its project partners, the Port is currently delivering the Centerm Expansion Project and the South Shore Access Project. These projects include terminal expansion and improvements which will increase container and vessel handling capacity and include off-terminal improvements to the adjacent road and rail network. Expected to be completed by 2022, these projects help meet the increasing export and import demand for containers shipped through the Port. The terminal container handling capacity is expected to increase by two-thirds to 1.5 million TEUs per year. Terminal improvements included:

- Creating land east and west of the existing terminal, which involved dredging, rock dykes, and fill.
- Expanding the Intermodal Yard by adding a 5th rail track and rail track extensions to the west and east to improve operations and rail service.
- Reconstructing the terminal entrance and exit gates to reduce wait times.

PORT'S FIRST CONTAINER CRANE COMMISSIONED

In March 1970, the Port of Vancouver added its first container gantry crane at Centerm.[lxix] Shortly thereafter, the first full container ship to use Centerm berthed at 4 p.m. on Saturday, May 30, 1970, a day ahead of schedule. With a total capacity of 750 TEUs, the *MS Golden Arrow* was the first of three fast vessels specially built for service between Japanese ports, Vancouver, and Seattle. That day, she had a cargo of 259 TEUs (= 211 twenty-foot boxes + 24 forty-foot boxes) for discharge at Centerm with the remainder of her cargo consigned to Seattle.

The essence of efficiency of a container service is that a container ship spends the minimum of time in port. When Centerm's container crane operated at normal efficiency, containers could be unloaded at a rate of 20 boxes per hour. Nobody expected that to happen that weekend. 'Bugs' were bound to develop until operators became fully conversant with the technical aspects of the job. Unloading of the first container ship at the new birth was the culmination of a year of planning by Jack Hopkins and the staff of Empire Stevedoring Co. Ltd., which leased the terminal from the National Harbour Board (NHB). Not only did they have to establish a whole new concept of cargo handling, but Empire Stevedoring also had to cope with the monumental lack of enthusiastic support from NHB officials in faraway Ottawa. Empire Stevedoring worked the *Golden Arrow* all through Sunday, starting at 8 a.m. and running through to 1 a.m. on Monday. After a brief respite, the longshoremen started again at 8 a.m. Monday with two shifts.[lxx] The use of shipping containers resulted in about 6,500 tons of cargo being unloaded within 48 hours of the vessel's arrival. As a point of reference, unloading 5,000 tons of breakbulk from a medium-sized freighter typically took about 6 days.[lxxi]

CHEMICAL FIRE CAUSES DOWNTOWN CHAOS

A massive chemical fire at Centerm caused chaos in much of downtown and East Vancouver on the afternoon of Wednesday, March 4, 2015, snarling traffic and evacuating some area residents. After the fire was reported at about 1:40 p.m., the terminal was shut down and all employees safely evacuated while firefighters and hazardous-material crews responded.

It was reported that the blaze started inside a container filled with trichloroisocyanuric acid, a hazardous compound used for disinfecting swimming pools and bleaching textiles. The location of the fire also posed a major challenge. The container where the fire started was centrally located. Containers were stacked 6 boxes deep on either side and 2 boxes high. The fire, initially a three-alarm blaze, was later upgraded to a four-alarm fire. The Vancouver Fire & Rescue Service deployed 65 firefighters, four aerial units and two fire boats to fight the fire while the Vancouver Police closed area roads and redirected traffic.

The toxic smoke forced all port operations on the South Shore to be shut down including operations on the nearby CN tracks. TransLink's West Coast Express and downtown bus service experienced major cancellations with all bus routes north of Broadway, between Boundary and Cambie rerouted until later that evening. By 6:30 p.m., the fire continued to burn but was largely under control. Fortunately, there were no injuries and the fire did not spread to adjacent containers, although some boxes suffered heat damage.[lxxii]

Aerial view looking north (left to right) of Centerm's gantry cranes, the Heatley Avenue overpass,
and the Ballantyne Cruise Ship Terminal on December 2, 2014.
(VFPA, Photographer – William Jans)

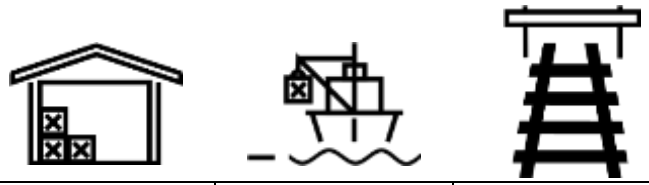
Massive metallic monster - Port of Vancouver's new quay crane for containerized shipping nears completion at Centennial Pier on March 7, 1970. The crane, which is first of its type in Vancouver harbour facilitated easy handling of shipping containers.
(Vancouver Archives, CVA 134-022, Pugstem Publications)

The Japan Line's *MS Golden Arrow* arriving on March 30, 1970, on her way to discharging and loading the first load of containers at Centerm. (Vancouver Archives, CVA 447-4809, Photographer – Walter E. Frost)

Fire apparatus arrive at Centerm as toxic smoke billows up from a chemical fire burning in a container on March 4, 2015.
(Photographer – Clayton Little)

Zhenhua Heavy Industries Co., Ltd. (ZPMC) *MS Zhen Hua 27* arriving in English Bay from Shanghai with five rail-mounted gantry cranes destined for Centerm on June 28, 2021.
(VFPA)

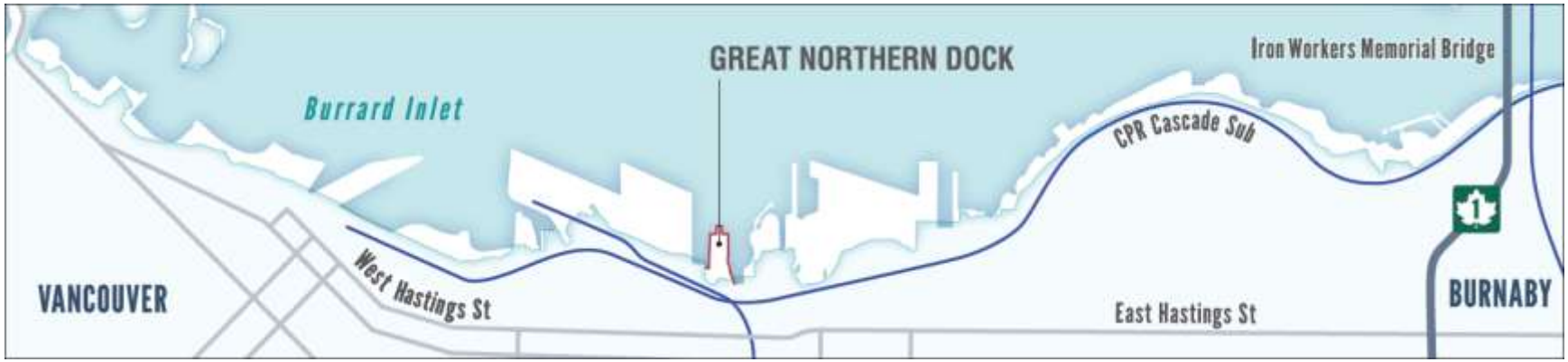
GREAT NORTHERN DOCK (1913-PRESENT)



2 FREIGHT SHEDS	2 DEEP SEA BERTHS	5 RAILWAY SIDINGS

THE PIER

Located at the foot of Campbell Avenue, construction of the Great Northern Railway Dock (Great Northern Dock) began in June 1912[lxxiii] and was substantially completed in February 1914 when the fishing steamer *Andrew Kelly* called to deliver a full cargo of halibut in cases brought south from Prince Rupert.[lxxiv] The pier was initially 450 ft (137 m) long and 360 ft (110 m) wide. The approaches were 250 ft (76 m) long and 280 ft (85 m) wide making the total length from shore to the end of the pier 700 ft (213 m). The concrete piers for the structure were cast hollow and sunk, afterwards being filled up solid with cement, aggregate and rebar. The cement for the hollow shells was shot onto a framework of steel mesh by a powerful airgun. Some 10,000 barrels of cement were used on the structure with about 3000 tons of steel for reinforcing. Similar construction techniques were used to build piers in San Francisco. Five sets of railway tracks were laid on the pier connecting across the CPR Cascade Subdivision to CN's north-south Burrard Inlet Line: three between the two sheds and one on each side for handling cargo direct from the ship, a literal demonstration of the rail-meet-keel principle. The railway tracks were depressed for the more convenient handling of cargo. Two steel frame, single storey freight sheds totaling 89,300 sf (8,300 sm) of warehouse space were built.[lxxv]



In 1930, the 17-year-old Great Northern Dock was enlarged. First, a 600-foot extension of the existing pier made it one of the longest finger docks poking out into the harbour. Then an equally long shipping shed covered it, with an enlarged passenger terminal accommodation built above the original building. A footbridge spanning the CPR tracks connected pedestrian traffic from Alexander Street to the waiting rooms.

In 1966, a new $350,000 rail-barge facility was added by Fraser River Pile Driving Co. allowing for unloading and loading of the GNR's five-track rail barges onto three tracks, 120 feet in length, at any state of tide.[lxxvi] Today (2022), the basin between Ballantyne Pier and the Great Northern Dock is being filled in as the dock is being incorporated into the Centerm Expansion Project.

NOTABLE EVENTS

MAN KILLED SALVAGING TANKER CARS

The menace of a waterfront conflagration which hung over Vancouver when four gasoline and oil tanker cars fell into Burrard Inlet at the Great Northern Dock passed on Wednesday, December 1, 1943, but not before one man had lost his life during the salvage operations. Carl Frost, age 29, engineer of the tug *Maple Prince* slipped on the guard rail while boarding his tug at 1 a.m. in the early morning. He hit his head on a fender log below and plunged into the oily waters of Burrard Inlet. Four and a half hours later, Mr. Frost was pronounced dead at Vancouver General Hospital.

Meanwhile a layer of gasoline, estimated at two inches deep, covered the water into which a salvage diver submerged carrying with him cables to fasten to the tanker cars which fell off the barge slip at the dock. There was another tense moment when the wire cable scraped against a steel tank and threw off a spark. Fortunately, the spark was too high to cause a dreaded flash fire. Eventually, all of the tanker cars were recovered, put on a barge, and taken east to Ioco (in Port Moody) and pumped out.[lxxvii]

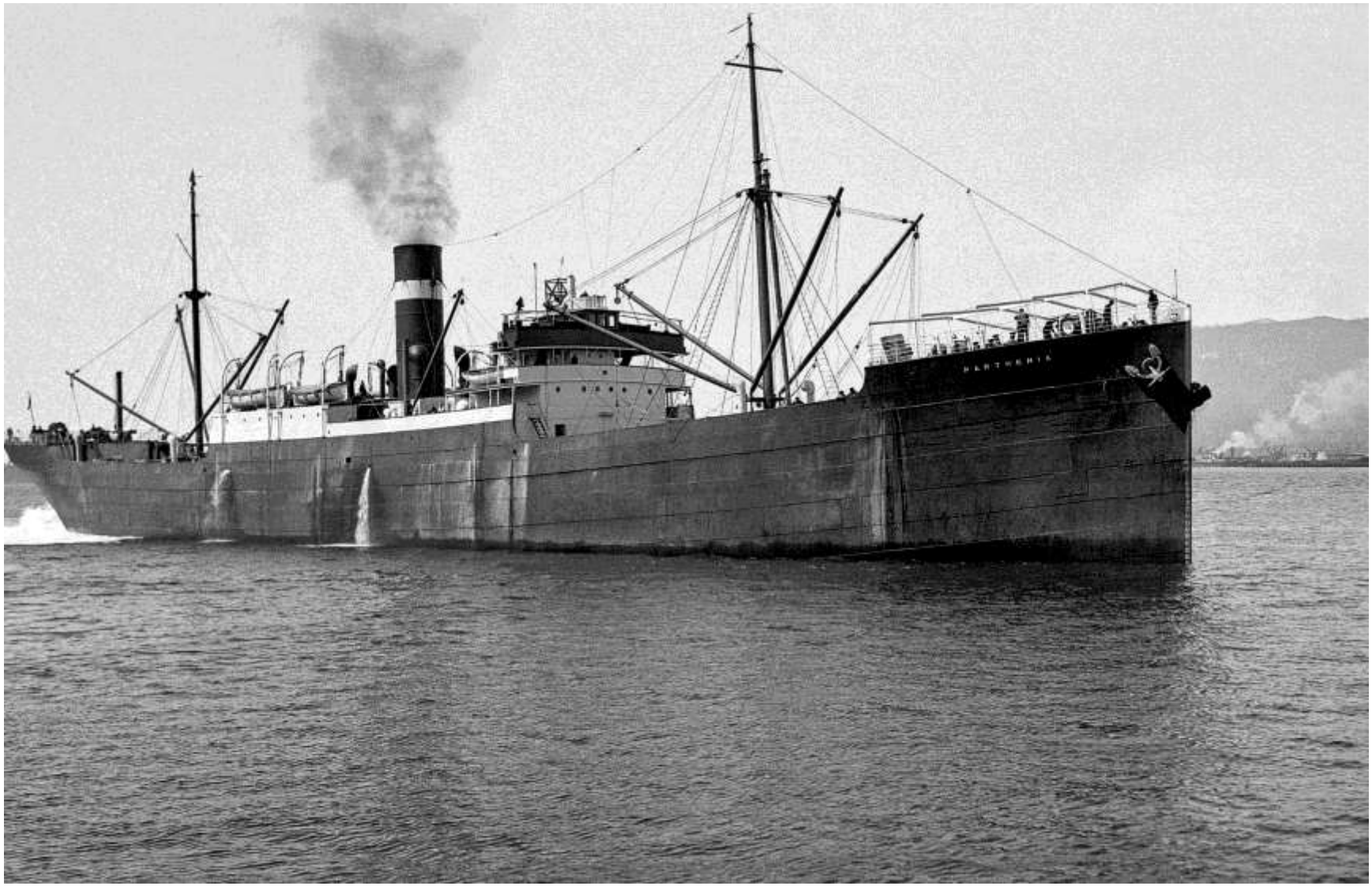
SMASHED AND SUNK

At the peak of a southeast gale, the Donaldson Line's *SS Parthenia* rammed into the Great Northern Dock on Thursday, December 18, 1948, sinking a barge, twisting the dock apron, and knocking out a dolphin. Belief is that the *Parthenia*, inbound in darkness and the high wind, may have been thrown off course as she was coming in for a landing at the adjacent Ballantyne Pier.

As a result of the collision, a 90 ft (27 m) rail-barge owned by F.M. Yorke and Son, moored to Yorke's dock facilities at the end of the Dock was smashed and submerged to her decks. Furthermore, the rails and apron on Yorke's wharf facilities were twisted and unusable. In addition, a nearby 10 or 12 log-pile dolphin had also been carried away in the ship-pier mishap. Fortunately, the *Parthenia* was reported to have suffered only superficial dents.[lxxviii]

SS Robert Dollar of the Dollar Steamship Company (Dollar Line) at Great Northern Dock in 1915.
(Vancouver Archives, CVA 99-169, Photographer – Stuart Thomson)

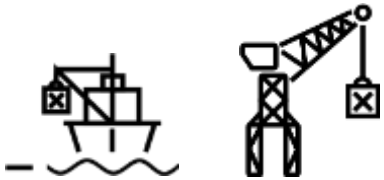
The Dollar Line's *SS Harold Dollar* at the Great Northern Dock in 1925.
(Vancouver Archives, CVA 260-1258, Photographer – James Crookall)



The Donaldson Line's *SS Parthenia* transiting Burrard Inlet in April 1933.
(Vancouver Archives, CVA 447-2550, Photographer – Walter E. Frost)

Aerial view of Great Northern Dock (foreground) in 1966 after the rail-barge facility was added.
(Royal BC Museum, I-21664, BC Ministry of the Provincial Secretary and Travel Industry, Film and Photographic Branch)

ROGERS DOCK | LANTIC INC. (1891-PRESENT)

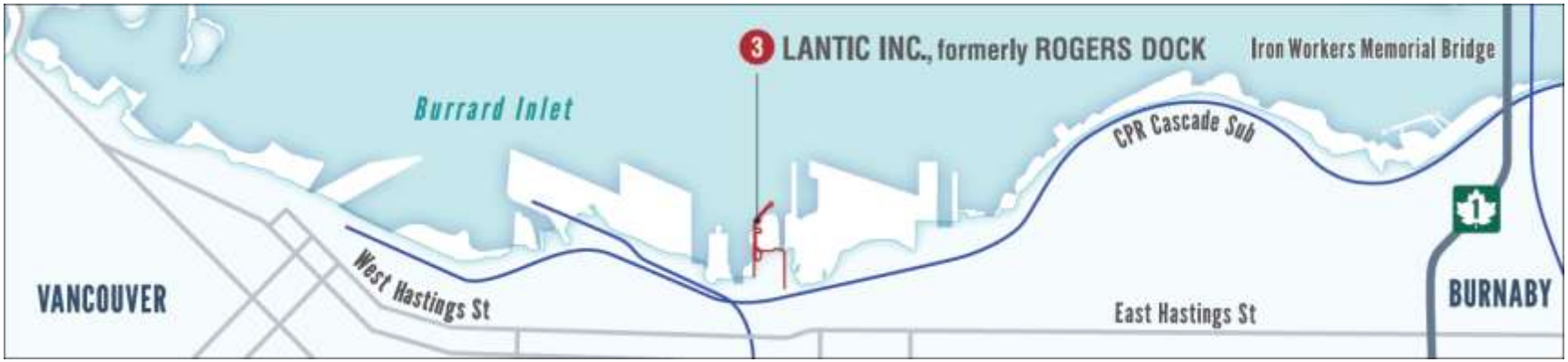


2 DEEP SEA BERTHS	2 TRAVELLING CRANES

THE PIER

Rogers Dock juts out into Burrard Inlet about 575 ft (175 m) and is hidden behind the landmark Rogers Sugar warehouse (also named after Benjamin T. Rogers), running parallel to Powell Street on the 13.5-acre B.C. Sugar Refining Co. site. In 1890, 24-year-old Rogers recognized the high cost of transporting refined sugar by rail from Montreal to Vancouver and that Vancouver was strategically located to access raw sugar shipments from Pacific origins and then send refined sugar to Canada's western population centres. Supported by the CPR's board of directors and the 4-year-old City of Vancouver, the company was incorporated on March 27, 1890.[lxxix] Since the refinery was completed in 1891, the narrow pier has allowed freighters to deliver raw sugar from across the Pacific (Indonesia, the Philippines, and Fiji) and Caribbean. In 1957, the discharging of raw sugar at Rogers Dock was automated through an upgrade to the pier and adjacent raw sugar storage warehouse. In 2008, Lantic Inc. was created by the merger of B.C. Sugar and Lantic Sugar Ltd., which dated back to the 1912 merger of three eastern sugar refineries, renamed at that time to Atlantic Sugar Refineries. In 2011, the Vancouver refinery reportedly produced up to 240,000 tons of sugar from imported raw sugar cane.

Rogers Dock continues to serve the Vancouver operation.



THE ADVENT OF AUTOMATION

In 1957, the old pier, more than 60 years old, was demolished to make way for a new pier and a new concrete and steel warehouse.

The pier was equipped with two traveling cranes designed by Colby Crane & Manufacturing Ltd. Each crane could lift two tons of raw sugar at a time from a ship's hold with its clam-shell bucket and dump it into a hopper that opened onto a covered conveyor belt, which carries the raw sugar to the new storage warehouse. Able to hold 40 million pounds of raw sugar, the 60 ft (18 m) high A-frame raw sugar warehouse was 100 ft (30 m) wide and 320 ft (98 m) long. Here, the golden sugar pours down through another hopper into a round pyramid, a true mountain of sugar. From the warehouse, the raw sugar is fed by another conveyor belt into the refinery for final treatment.

This $1.5 million investment reportedly allowed a crew of seven to unload 1,500 tons an hour of bulk sugar. Before the upgrade, a gang of 47 longshoremen would need at least five hours to unload a similar amount of sacked sugar. [lxxx]

THE COMPANY PICNIC[lxxxi]

Company picnics were an important part of B.C. Sugar employee relations before a 1917 strike and their popularity and frequency increased after the 78-day job action. B.T. Rogers and his successors used employee good-will events like picnics to garner favour, ensure loyalty amongst employees, and dissuade unionization.

Annual picnics and Christmas parties became a hallmark of B.C. Sugar and were enthusiastically embraced by all staff, even after B.T. Roger's passing in 1918. Picnickers can be seen enjoying music provided by a live band, taking part in partnered and/or single footraces, and other games, as well as eating and socializing.

Nonetheless, the B.C. Sugar Refinery workers eventually unionized in 1944 into the Industrial Union of Sugar Workers (later known as local 517 of the Retail, Wholesale and Department Store Union).

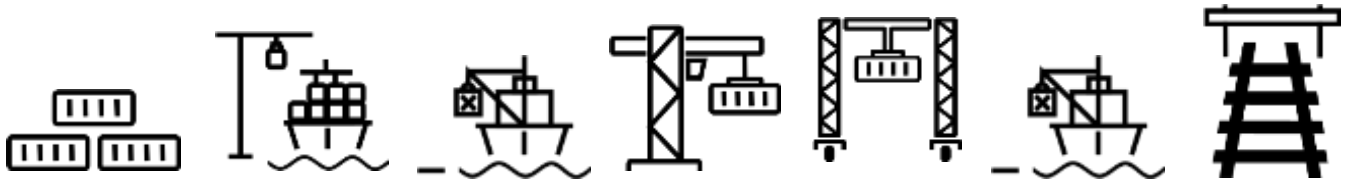
Detail of B.C. Sugar Refinery aerial in 1957 showing the pier, conveyor belts, and storage warehouse (centre) at Rogers Dock. The VHC fishing dock is to the left while to the right are the elevators of today's Alliance Grain Terminal. (Vancouver Archives, CVA 2011-092.3678, B.C. Sugar Museum collection)

Unloading raw sugar from the *MS Stove Transport* using the traveling cranes with clam-shell buckets and covered conveyor belts on August 2, 1963.
(Vancouver Archives, CVA 2011-092.5886, B.C. Sugar Museum collection)

Automation using travelling cranes, clam-shell buckets, hoppers, and covered conveyor belts changed the discharge of raw sugar from a breakbulk (bags manually unloaded by longshoremen) to a bulk commodity that was faster and cheaper to discharge.
(Vancouver Archives, CVA 2011-092.2797, B.C. Sugar Museum collection)

B.C. Sugar Refining Co. employee's 9th annual picnic at Selma Park in Sechelt on July 24, 1926.
(Vancouver Archives, CVA 2011-092.1548, B.C. Sugar Museum collection)

VANTERM (1975-PRESENT)

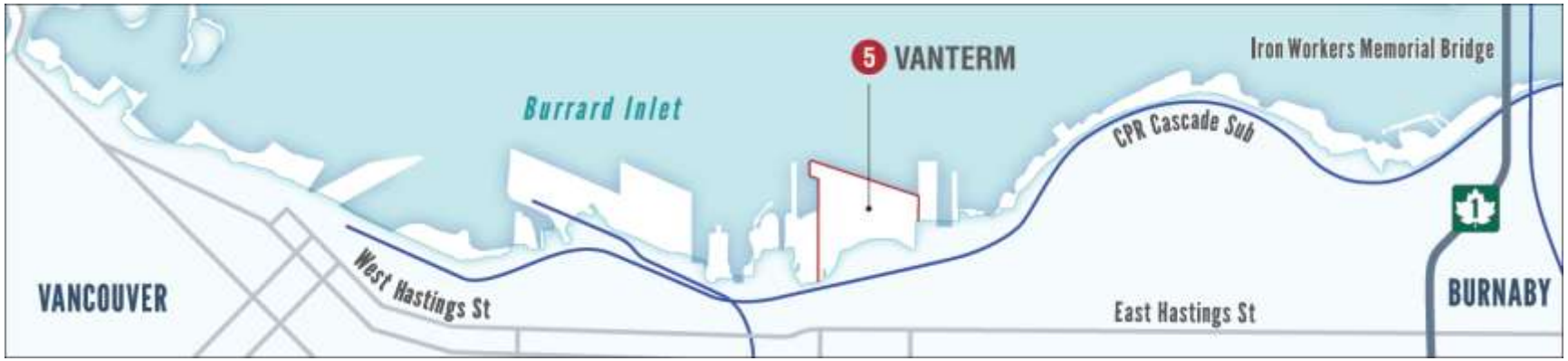


76-ACRE TERMINAL	2 CONTAINER BERTHS	1 DEEP SEA BERTHS	6 GANTRY CRANES	15 RTG	1 DEEP SEA BERTHS	9 RAILWAY SIDINGS

THE WHARF

In September 1972, the federal government announced the planned construction of Vancouver's first purpose-built container terminal. The $21 million facility would be located between Clark and Commercial Drives obviating the need for constructing a terminal west of Main Street, a controversial proposal at the time.[lxxxii] When finally completed in 1975, Empire Stevedoring Co. Ltd. began operating Vanterm, which offered 230,000 sf (21,365 sq m) of warehousing in two freight sheds and two deep sea vessel berths served by two gantry cranes. In 1976, a reported 76,436 TEU moved over the wharf.[lxxxiii] The freight sheds were removed by 2004.

Today, Global Container Terminal (GCT) operates Vanterm which is reported to be the most productive terminal in Port Metro Vancouver given its annual capacity of 530,000 TEUs. The 76-ac (31-ha) container terminal currently has 2,030 ft (619 m) of berth space, six high-speed Super Post-Panamax gantry cranes, and a fleet of modern container handling equipment. incorporated into Vanterm, Lapointe Pier has a total 9,600 ft (2,926 m) of track in an on-dock intermodal rail yard. Its nine sidings can access both the CPR and CN Rail mainlines.[lxxxiv]



WHARF AND GANTRY CRANE STRUCK BY CONTAINER SHIP

On January 28, 2019, Evergreen Line's container ship *MS Ever Summit* was berthing under the conduct of a pilot at Vanterm with two tugs assisting when the vessel struck the berth and a nearby shore gantry crane. The vessel, berth, and crane were damaged. There were no injuries or pollution. At the time of the occurrence, the vessel was engaged on Evergreen's Transpacific Northwest container service between the Pacific coast (Tacoma and Vancouver) and various ports in China and Japan. Approximately six containers stowed in the uppermost bays were damaged when the crane boom fell onto the vessel. In addition, the *Ever Summit* sustained damage that required temporary repairs to the hull which were completed by February 6 in Vancouver. As a result of the occurrence, vessel operations at the berth were disrupted for approximately eight days. Berth 6 sustained impact damage as did the wooden bull rail, mooring bollard and two of the fender panels. Furthermore, the apron (the horizontal surface forming the topside of the berth) was punctured and some pre-cast concrete panels were damaged. Gantry Crane 5 was declared a total loss while Crane 3 sustained minor damage. In addition, numerous tractor-trailers stowed below Crane 5 were damaged. The Transportation Safety Board investigation found human error to blame for the crane collapse, but also raised concerns about the increasing size of container ships and the need to upgrade port infrastructure to safely handle these larger vessels.[lxxxv]

NEW GANTRY CRANES DELIVERED

The heavy load carrier *MS Zhen Hua* 35 carrying seven large gantry cranes anchored in English Bay for several days before traversing the First Narrows channel and slipped beneath the Lions Gate Bridge with just a few metres to spare. "We needed the right tide cycle for the cranes to come under the Lions Gate Bridge," said Marko Dekovic, Global Container Terminal's (GCT) head of public affairs. "So the booms were lowered, and with the right tide, and obviously with B.C. Coast Pilots and a tug assist, she came safely under the bridge." According to GCT, the new equipment replaced two 25-year-old cranes, including one that collapsed after a January 2019 collision. The pair of 270 ft (82 m) tall cranes from Shanghai were installed at GCT's Vanterm berth on the south shore with the rest of the cranes on the ship bound for a competing west coast port in Oakland, California.[lxxxvi] The cranes will be about 59 ft (18 m) taller than the old cranes, and instead of the red colour of the old cranes, they will be mainly "cloud white" colour to "visually mitigate daytime skyline visibility."

"They are Super Post-Panamax cranes, able to service the larger ships, vessels, which will be going to our terminal," said Dekovic. It took a few days to offload the cranes from the ship to the dock and another four months to completely install and test them before the cranes began handling cargo containers. Vanterm's old gantry cranes were relocated to Nanaimo for reuse at GCT's Duke Point Deep-Sea terminal in October 2020.[lxxxvii]

Aerial view of Global Container Terminal's Vanterm looking towards the northeast with the old gantry cranes.
(VFPA, Nick Souza Photography, 2014)

Gantry cranes discharging and loading containers from the Yang Ming Line container ship *MS YM Zenith* at Vanterm.
(VFPA, 2012)

The Evergreen Line's *MS Ever Summit* was being manoeuvred into Berth 6 at Vanterm on January 28, 2019, when part of her stern hit Gantry Crane 5, collapsing it across the container ship's stern.
(Toronto Star, 2019)

The heavy load carrier *MS Zhen Hua* 35 passing through the First Narrows
as she delivers new gantry cranes to Vanterm in November 2020.
(BC Coast Pilots, 2020)

LAPOINTE PIER | PACIFIC ELEVATORS (1916-PRESENT)

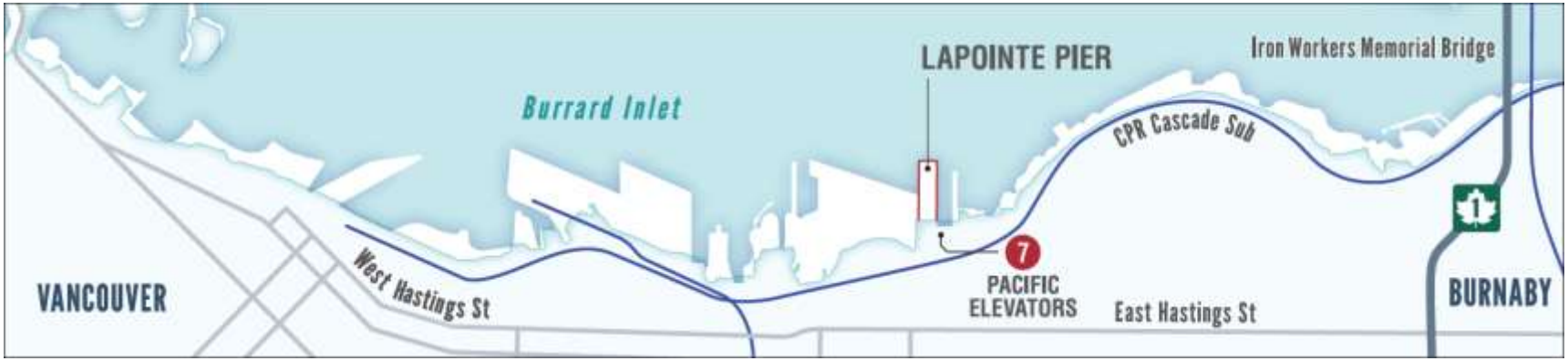
2 FREIGHT SHEDS	5 DEEP SEA BERTHS	1 GRAIN TERMINAL	6 RAILWAY SIDINGS

THE PIER

Originally known as the Dominion Government Pier & Grain Elevator (or Government Dock), construction on Vancouver's first modern concrete pier and terminal elevator started in October 1913 at the foot of Salsbury Drive. When substantially completed in 1916, the $1.5 million project resulted in an 800 ft (245 m) long, 300 ft (90 m) wide concrete pier structure with five deep sea berths and the 1.25-million-bushel Grain Terminal No. 1.[lxxxviii] Grain was loaded onto ships using covered conveyor belts along each side of the pier as well as Grain Jetty No. 1 to the east. Two years later, two freight sheds provided 151,200 sf (14,050 sq m) of covered warehouse storage space.

In 1924, the pier was named for Canadian lawyer and politician, Ernest Lapointe, PC, MP, Minister of Marine and Fisheries (1876 – 1941).[lxxxix]

In 2007, Viterra assumed ownership of the pier and grain terminal and renamed Pacific Elevators. Seven years later, Viterra applied to Port Metro Vancouver for and received permission to increase the terminal's handling capacity and efficiency through four projects that would upgrade electrical services, upgrade dust control systems, dredging the Pacific Elevator basin, and upgrading the ship loading system. The upgrades were completed by 2015.[xc]



STEVEN'S FOLLY

When the grain elevator was completed in 1916, it generally sat unused for about eight years and as a result, was dubbed "Steven's Folly" after its biggest proponent Henry Herbert Stevens, MP for Vancouver City. This eight-year lag effect has been attributed to "teething problems" with the Panama Canal which opened in 1914; a worldwide shortage of shipping due to the First World War; unproven fears of wheat being unable to survive transatlantic shipment via the tropical Panama Canal (disproved in 1917 when only 160 of the 100,000 bushels of Alberta wheat were damaged after transport to Europe by the *SS War Viceroy*); and high westward rail freight rates that favoured the eastern ports of the Lakehead (resolved by the reinstatement of the Crow Rates in 1922).[xci] However after eight years, it was reported that over 30 million bushels of grain had passed through the silent but swift spouts fed by Grain Terminal No. 1 during the season ending in March 1924.[xcii]

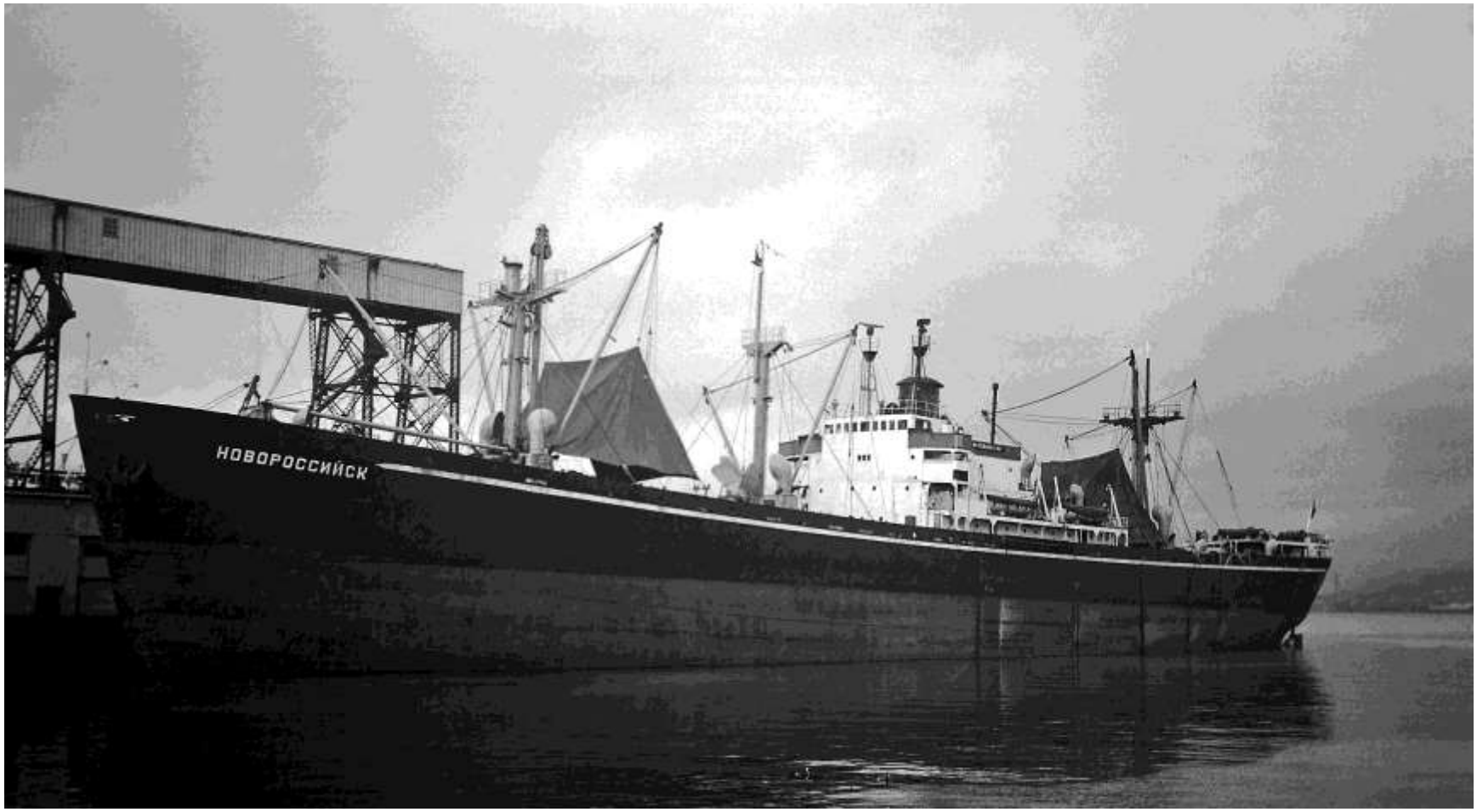
DANGERS OF FOG

The Norwegian freighter *MS Granville* (Captain A.T. Andersen) slammed into the fog-shrouded Grain Jetty No. 1 on the morning of Monday, October 29, 1962. In addition, she was reported to have sideswiped the American freighter *SS Santa Juana* and Norwegian freighter *MS Siranger*. The *Granville* was trying to dock at the jetty at about 7 a.m. when the crash occurred. Longshoremen said visibility in the fog was about 15 ft when she hit the pier. The freighter's bow went in and up and knocked the steel legs away from a 90 ft (27 m) high grain gallery that runs along the dock. The gallery collapsed onto the ship and dock. The *Granville* had a six-foot hole in her port bow and minor superstructure damage from the falling gallery. After being pulled free from the jetty by eight tugboats, the *Granville* was towed to North Vancouver's Burrard Dry Dock where she underwent about $100,000 worth of repairs to her bow and forecastle.[xciii] Damage to the jetty was estimated at $500,000. It took about six months to effect repairs, which occurred during the height of shipping season. Fortunately, no one was reported injured or killed.[xciv]

Aerial view looking south with Grain Jetty No. 1 (left), VHC Grain Terminal No. 1 (centre rear), and Lapointe Pier (right) in 1928.
(Vancouver Archives, CVA 155-3)

The *SS War Viceroy* taking on the first shipment of grain bound for Europe at Lapointe Pier in 1917.
(Vancouver Archives, CVA 99-580, Photographer – Stuart Thompson)

The *MS Granville* tangled up in the metal supports after slamming into the fog-shrouded Grain Jetty No. 1 on Monday, October 29, 1962.
(Vancouver Archives, CVA 447-4851.1, Photographer – Walter E. Frost)



The Soviet freighter *SS Novorossisk* docked at Lapointe Pier to take on grain on January 18, 1964.
Note the large tarps deployed over the holds in case of rain.
(Vancouver Archives, CVA 447-7240.1, Photographer – Walter E. Frost)

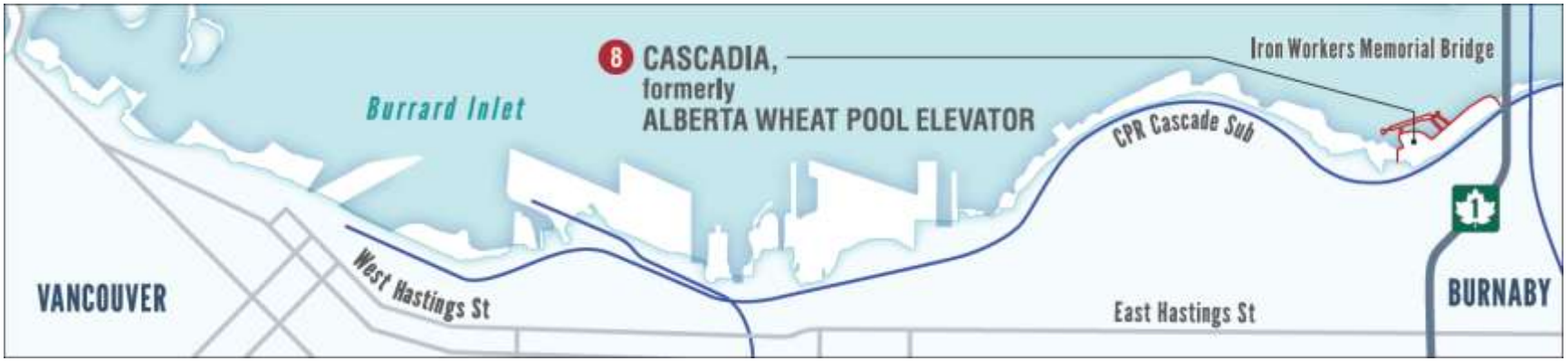
ALBERTA WHEAT POOL ELEVATOR | CASCADIA (1928-PRESENT)

1 GRAIN TERMINAL	3 DEEP SEA BERTHS	20 SHIPLOADING CHUTES	2 RAILWAY SIDINGS

THE WHARF

Located just west of the Second Narrows, construction of the Alberta Wheat Pool grain terminal started in October 1927 when Northwest Construction Company and J.W. Stewart were awarded the contract for concrete work, trestles, and piles. When completed the following year, the terminal had a 2,400,000-bushel storage capacity and cost about $2 million.[xcv]

Cascadia as it is known today is run by Cascadia Port Management Corporation. The terminal is 75 per cent owned by Viterra and 25 per cent by Richardson International under an agreement reached in September 2013. Cascadia handles wheat, durum, canola, and barley with the ability to efficiently unload, weigh, clean and ship grain to export customers around the world. The CPR's two service tracks each hold 60 cars. This allows the terminal to unload 210 railcars in an eight-hour period. In 2016, Cascadia completed a major upgrade of its facilities, including the installation of new bulk weighers, upgraded shipping conveyors and rotary cleaners, and improved electrical and dust control systems. The most significant project was the installation of a new ship loader system, which significantly increased shipping capacity and allows for the loading of Post-Panamax vessels.[xcvi]



WINNER OF TWO SILK HATS

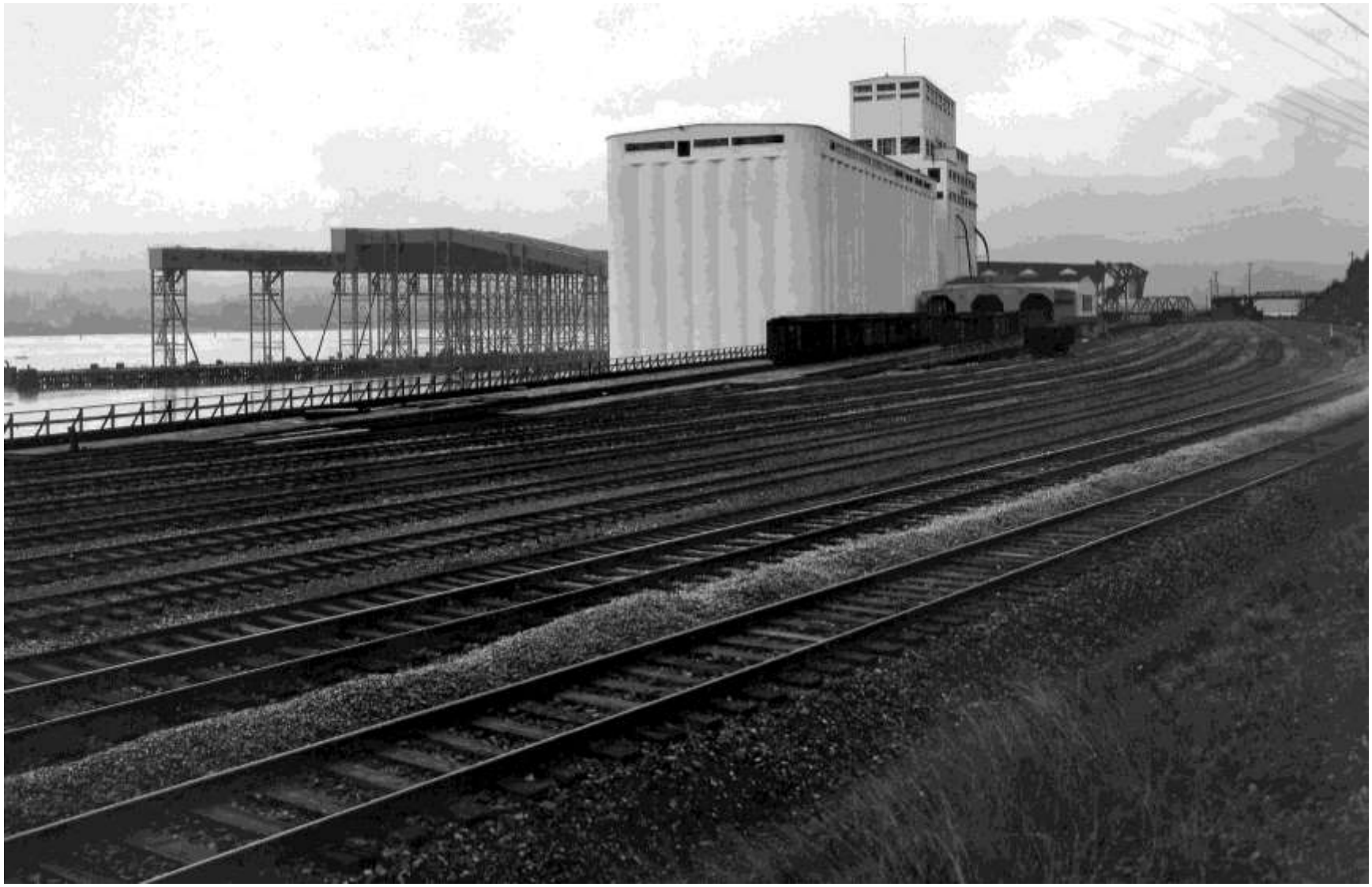
Captain F. Bernier, master of the Roper Line's *SS Cragpool* was honoured for not only commanding the first ship to load a full cargo of grain from the port's newest terminal but also for commanding the first ship to load a full cargo of the season's wheat. Consequently on Friday, October 5, 1928, Messrs. J. Bennett, Superintendent of Terminals for the Alberta Wheat Pool and F.R. McDonald Russell, the Chairman of the Board of Vancouver Harbour Commissioners each presented Capt. Bernier with a silk hat, although one was an order at a local hat shop.

On her maiden voyage, the 5,127-ton *Cragpool* arrived at 9 p.m. on Thursday evening. Direct from sea, the freighter berthed at the wharf under the elevator galleries. [xcvii] It had been feared for some time that this would not be possible due to conflicting tides and currents. However, this was dispelled by the ease and efficient manner with which the *Cragpool* was handled by her crew when docking. The 1,500 ft (455 m) long wharf allowed up to three vessels, such as the *Cragpool,* to load from the series of 20 dock spouts supplied by four conveyor belts discharging grain at a rate of 60,000 bushels per hour.[xcviii]

PNE SMOKED OUT

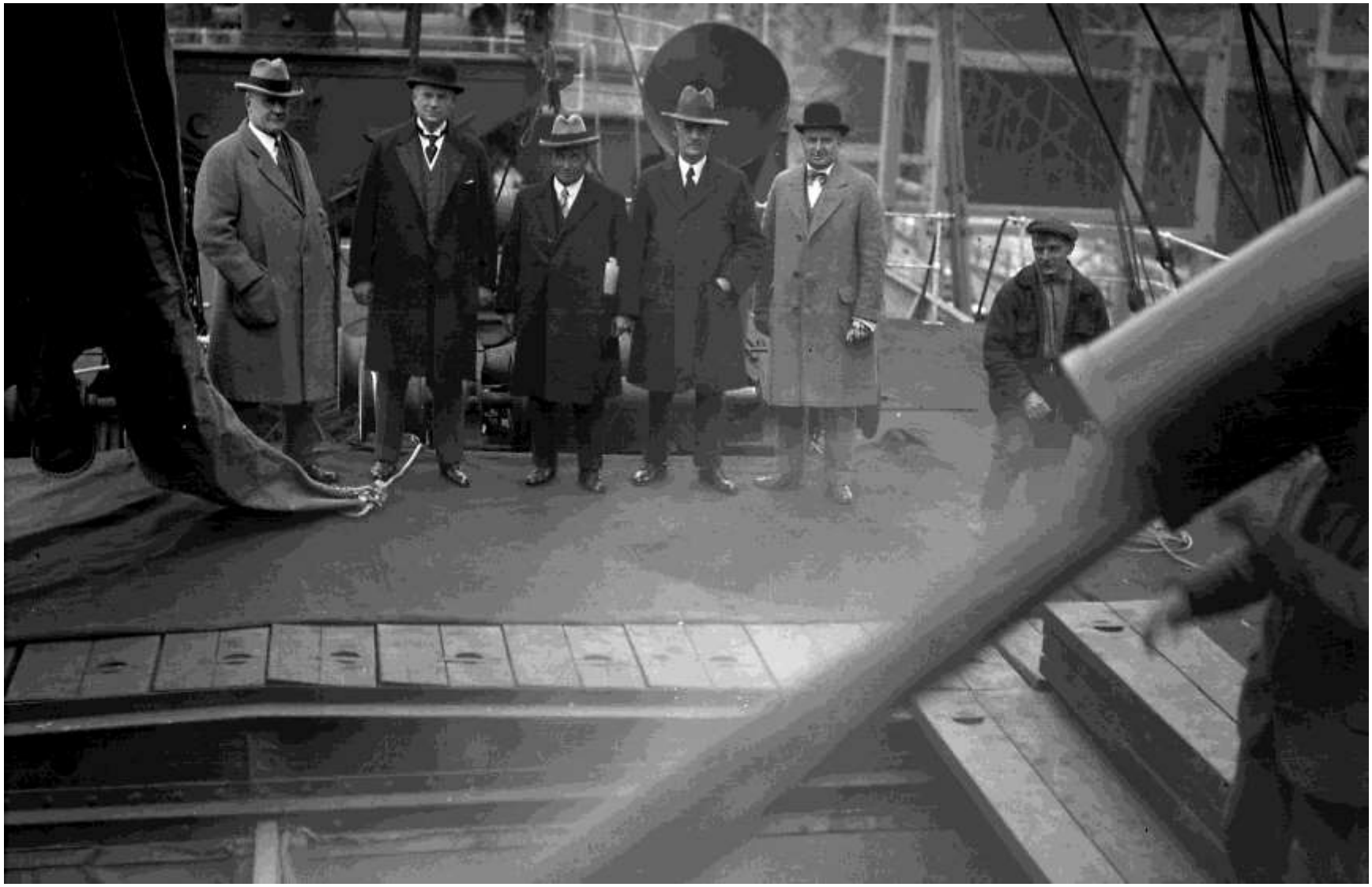
On the evening of Wednesday, August 24, 1994, thousands of Pacific National Exhibition fairgoers were evacuated as over 100 firefighters battled a stubborn fire at the Alberta Wheat Pool Elevator. The four-alarm blaze appeared to have been started by a welder's torch, which ignited a wharf area which was undergoing renovation. Unfortunately, the sprinkler system under the wharf had been shut off to facilitate the repairs. As the flames ripped along the creosote-soaked timbers, smoke billowed over the fairgrounds. The flames also threatened to ignite the grain dust inside the terminal's silos. The fire caused over 300 wheat pool workers to be sent home and the clouds of smoke resulted in the cancellation of the ninth and final horse race at Hastings Park, and the closure to traffic of the Iron Workers Memorial Bridge, just east of the terminal. [xcix]

The Alberta Wheat Pool Elevator's location limited access from both land and sea affected the ability of fire fighters to battle the blaze. The single at-grade crossing of the CPR Cascade Subdivision's tracks forced fire engines and crews to approach from the south through blinding and toxic smoke. On the north side, the 15 ft (4.6 m) changes in tide caused by the Second Narrows impacted the ability of fire boats to effectively approach and attack the fire. Nonetheless, eight-and-a-half hours after the first alarm was rung at 7 p.m., the fire was finally brought under control at 3:30 a.m. [c]



The Alberta Wheat Pool No. 1 grain elevators on October 2, 1928, shortly after it was completed.
(Vancouver Archives CVA 232-03, Photographer – Leonard Frank)

Berthed at the newly opened Alberta Wheat Pool grain elevators,
the SS Cragpool is taking on the terminal's first load of new-crop grain on October 5, 1928.
(Vancouver Archives CVA 99-1637, Photographer – Stuart Thomson)



Officials witnessing the loading of the terminal's first load of grain onto the *SS Cragpool* at the Alberta Wheat Pool on October 5, 1928.
(Vancouver Archives CVA 99-1638, Photographer – Stuart Thomson)

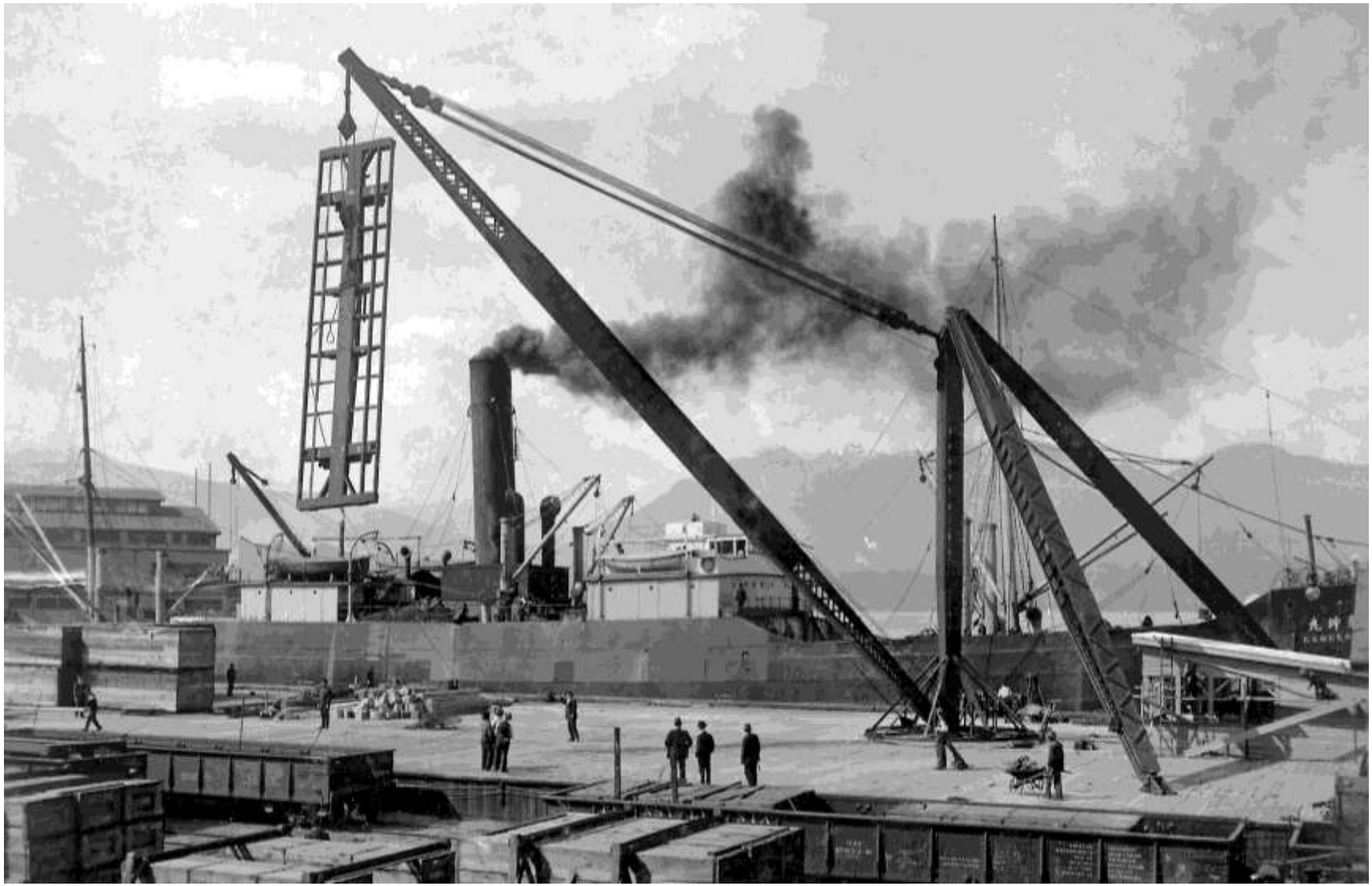
Longshoremen loading the terminal's first bushels of grain into holds of the *SS Cragpool* at the Alberta Wheat Pool on October 5, 1928.
(Vancouver Archives CVA 99-1639, Photographer – Stuart Thomson)

An aerial view looking south in 2021 with the Cascadia Terminal front and centre.
(VFPA, Photographer - Andrew Fyfe, 2021)

A ship being nudged into position by two tugs at the Cascadia Terminal.
(Photographer – Steve Robinson)

CARGO HANDLING

Longshoremen have always been an integral part of Vancouver's waterfront. After the shipping container revolution of the 1960s, the number of longshoremen required on the waterfront declined by over 90% as the volume of breakbulk cargo declined significantly. This compendium does not address their efforts as entire books have been written on their hard work. Nonetheless, the following pages illustrate how cargo has been transloaded over the years at the South Shore's piers and wharves in all types of weather.



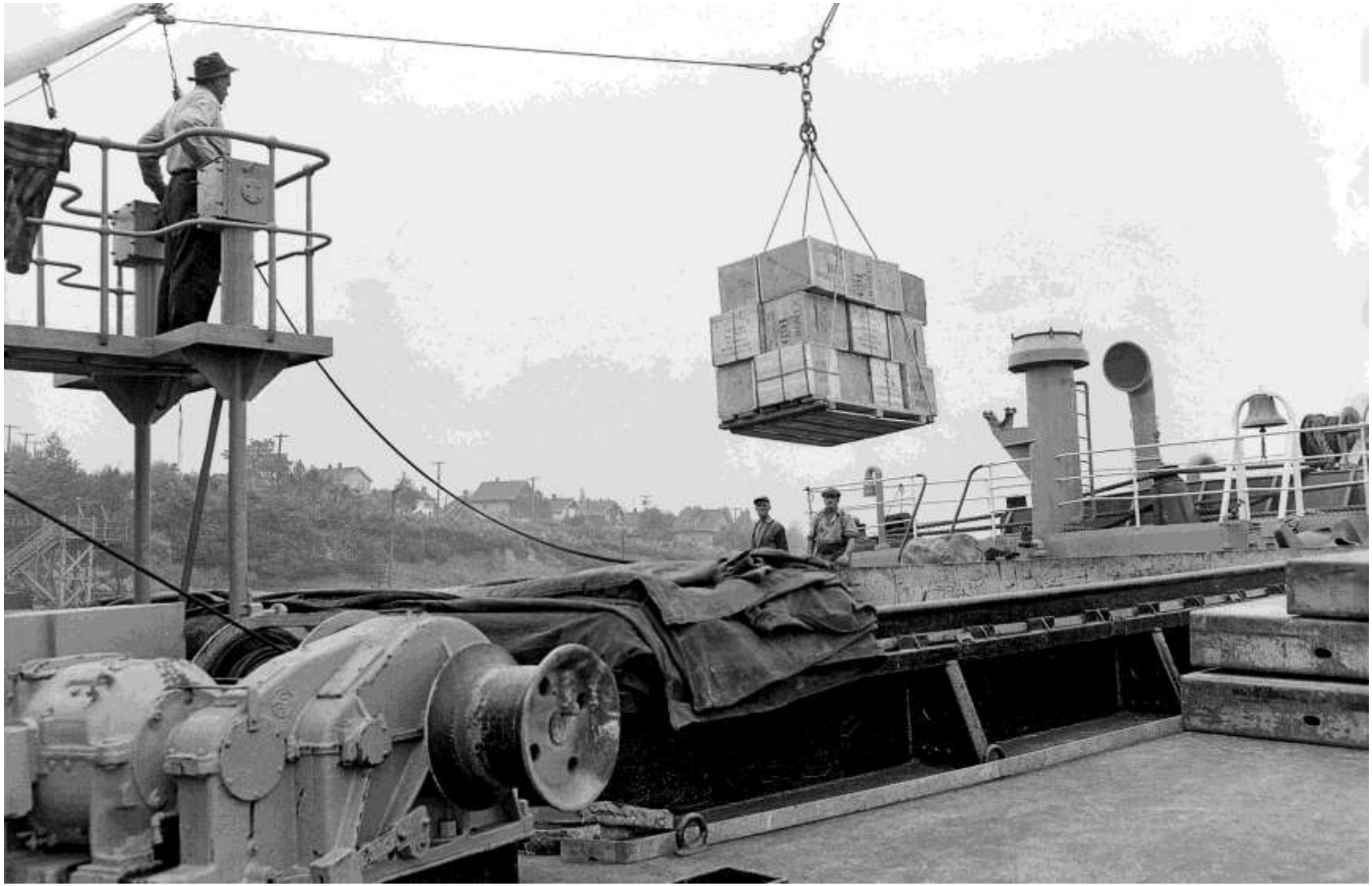
Parts of a rail car being unloaded from the CPR freighter *SS Kenkon* by the 50-ton derrick at the wharf between Sheds 6 and 7 east of CPR Pier D in 1916.
(Vancouver Archives, CVA 152-8.2, H.A. Price collection)

Longshoremen transferring bales of raw silk from a shed to a waiting CPR train.
(Canadian Pacific Archives, CPRA 6940)

Longshoremen loading lumber destined for England from a barge onto
Canadian Transport Company Ltd.'s *SS Lodestone* at Terminal Dock on May 18, 1946.
(Vancouver Archives, CVA 586-3000, Photographer – Don Coltman)

The Union Steam Ship Company's combi-liner SS Waihemo being loaded in foul weather at CPR Pier B in 1946.
Note the longshoremen in oilskins, the huge tarps deployed over the hatches to keep the holds dry, and the lumber secured on deck.
(Vancouver Archives, CVA 1184-3143, Photographer – Jack Lindsey)

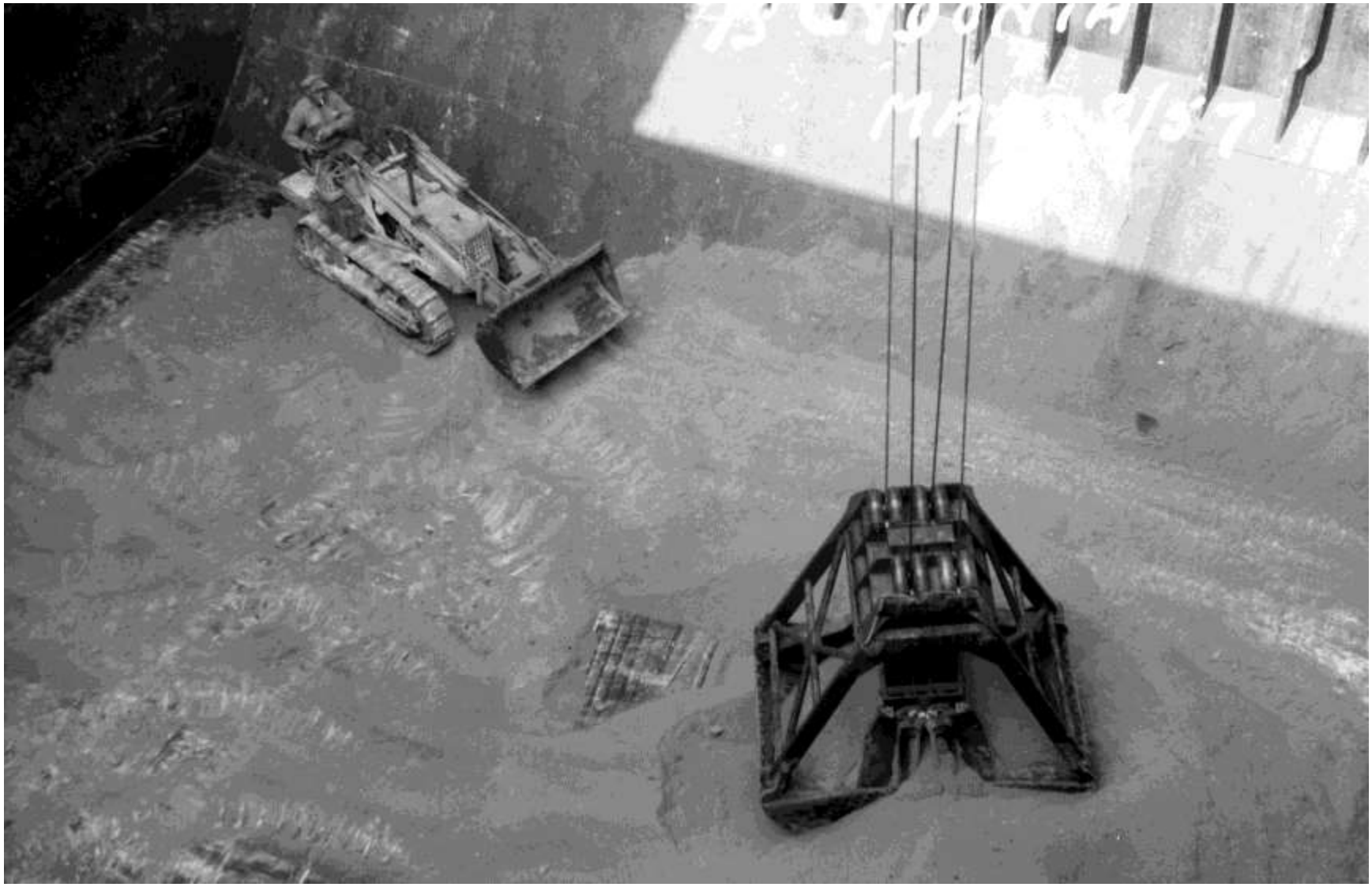
Longshoremen loading sacks of flour onto Western Canada Steamships' *SS Hasting Park*
for export to China at Terminal Dock on July 18, 1946.
(Vancouver Archives, CVA 586-4558, Photographer – Don Coltman)



Boxes of tea being unloaded from the Blue Star Line's *SS Island Mail* in 1950.
(Vancouver Archives, CVA 586-8679, Photographer – Don Coltman)

The *SS Bataan* of the Fred Olsen Line unloading Vauxhall automobiles from England at Lapointe Pier in 1955.
(Jewish Museum and Archives of British Columbia A.1985.001-1-28-LF.00542, Photographer – Leonard Frank)

The last load of raw sugar being manually unloading using the *SS Suva*'s derricks and winches in foul weather at Rogers Dock on January 9, 1957.
(Vancouver Archives, CVA 2011-092.2658, BC Sugar Museum collection)



A clam-shell bucket scoop and tractor being used to unload raw sugar in the hold of *SS Cydonia* at Rogers Dock on May 28, 1957.
(Vancouver Archives, CVA 2011-092.2940, BC Sugar Museum collection)

A longshoreman loading wheat on a ship using a mobile shiploading chute at the Alberta Wheat Pool elevator in 1962.
Note the longshoreman "playing" the shovel in the background.
(Vancouver Public Library, VPL-85781J, Photographer – Stanley Triggs)

Gantry cranes discharging and loading containers from the Yang Ming Line container ship *MS YM Zenith* at Vanterm.
(VFPA, 2012)

Centerm's Gantry Cranes 3 and 4 moving shipping containers from truck to ship and vice versa in 2015.
(VFPA, Photographer – William Jans)

GLOSSARY

- Bale cube – the space available for cargo in bales or on pallets, etc., where the cargo does not conform to the shape of the ship. Measured in cubic meters or feet.
- Ballast – weight (e.g. sand, gravel, or water) added to the ship's bottom to provide stability and trim, especially when she is without cargo. Most vessels are fitted with water tanks and pumps specially designed for this purpose.
- Barque – a type of sailing vessel with three or more masts having the fore- and mainmasts rigged square and only the mizzen (the aftmost mast) rigged fore and aft. Sometimes, the mizzen is only partly fore-and-aft rigged, bearing a square-rigged sail above.
- Boom – a heavy spar for handling cargo; usually attached to the base of a mast or kingpost.
- Bow – the front portion of the vessel.
- Bowsprit – a spar extending forward from a ship's bow, to which the forestays are fastened. Its purpose is to increase the amount of sail area.
- Breakbulk – Breakbulk cargo is commodity cargo that must be loaded individually in a ship's cargo. The goods can be packaged in bags, cases, crates, drums, barrels, or kept together by baling and placed onto pallets. Typical breakbulk commodities include lumber, paper, raw sugar, steel, and machinery.
- Brutalist – an architectural style that appeared during the 1950s that is characterised by minimalist constructions that showcase the bare building materials and structural elements over decorative design.
- Bulk – Bulk cargo is commodity cargo that is transported in large quantities and unpackaged. Typical bulk commodities include coal, chemicals (potash, sulphur), grain, and raw sugar.
- Bunker – a space in which fuel is stowed. The actual fuel itself is usually referred to as bunker fuel. Bunkering is taking fuel on board.
- Bushel – a measure of volume equal to 8 gal (36.4 L), used for dry goods, e.g. grain.
- Classical Revival – an architectural style that emerged during the 1890s that is characterised by the arrangement of windows and doors which is formal and symmetrical, with the front door often flanked by pilasters or side lights and capped with a flat entablature, broken pediment, or rounded fanlight.
- Derrick – a boom with tackle for handling cargo.
- Dock – a usually wooden pier used as a landing place or moorage for boats.
- Foremast – the mast closest to the bow of a ship.
- Grain cube – The maximum space available for cargoes such as grain, where the cargo flows to conform to the shape of the ship. Measured in cubic metres or feet.
- HAL – Holland America Line
- Hogshead – a tobacco-filled wooden barrel weighing 1000 lbs.
- Hold – the space below deck where the cargo is stored.

- In the hole – A passing siding. Inferior trains wait 'in the hole' to let superior ones pass.
- Kingpost – A short vertical post used to support a derrick boom, typically positioned near hatchways, and may also be referred to as short masts. Kingposts may be single, i.e. on the centre line of the vessel; kingposts are more commonly in pairs, i.e. abreast.
- Longshoremen – in BC, typically refers to waterfront manual labourers who load and unload ships, trucks, or trains; derived from *man-along-the-shore*. Also see "stevedore."
- Mast – a vertical or raked structure used to support cargo derricks, radio antennas, and to a lesser degree for signaling (see courtesy flag), observation (see crow's-nest) or for carrying lights.
- Mission Revival – an architectural movement, beginning in the late 19th century, for the revival and reinterpretation of American colonial styles drawing inspiration from the late 18th and early 19th century Spanish missions in California.
- MS – Motor Ship. Ship prefix used for seagoing vessels propelled by internal combustion engines.
- NYK – Nippon Yusen Kaisha Line
- Oilskin – waterproof cloth used for making foul weather garments typically worn by sailors, longshoremen, and others.
- OSK – Osaka Shosen Kaisha Line
- Pier – a structure extending outward at an angle from the shore into navigable waters and normally permits the berthing of vessels on both sides along its entire length.
- Port – the left-hand side of a ship looking towards the bow, shows a red light.
- RMS – Royal Mail Ship. Ship prefix used for seagoing vessels that carry mail under contract to the British Royal Mail.
- Silkie – term used to describe cargo trains carrying expensive shipments of Asian raw silk in wood-lined steel box cars. The trains sped from West Coast seaports to merchants in eastern Canada and the U.S.A. from 1900 to the 1930s.
- SS – Steamship. Ship prefix used for seagoing vessels propelled by steam.
- Starboard – the right-hand side of a ship looking towards the bow, shows a green light.
- Stern – the rear portion of a vessel.
- Stevedore – phonetic spelling of *estivador* (Portuguese) or *estibador* (Spanish), meaning a man who loads ships and stows cargo. In BC, typically refers to the commercial stevedoring company contracted with a terminal owner to manage all terminal operations. Also see "longshoremen."
- Teredo (shipworm) – a marine clam that has a shell used for burrowing in submerged wood and a wormlike body. Shipworms are known to cause grave damage to wharf piles and wooden-hulled ships.
- TEU – twenty-foot equivalent unit. A standard size of a container, typically used for denoting the output (or capacity) of container terminals as well as for defining the container carrying capacity or loading of vessels.
- Tonnage - three tonnage figures commonly used for merchant ships include:
    - Deadweight (DWT) - this is the weight in tons of the cargo, stores, fuel, etc. carried by a ship when down to her loading marks. It indicates a ship's cargo-carrying and earning capacity

    - Gross Register (GRT) - the total cubic capacity of all enclosed spaces at 100 cu. ft. to the ton. It is used for general purposes and in national maritime registers
    - Net register (NRT) - measured in the same way as gross tonnage, the net register is the capacity of enclosed space less that of the engine and boiler rooms, crew accommodation, stores, and all spaces necessary for the working of the ship. It is the cubic capacity of all earning space. It is on the tonnage figure that most harbour dues and other charges are calculated
- Wharf – a structure extending parallel to the shoreline, connected to the shore at more than one point (usually with a continuous connection) and providing in most cases berthing at the outshore face of the structure only.
- Wharfinger – an owner or keeper of a wharf.

ABOUT THE AUTHOR

FLORIS VAN WEELDEREN

Floris van Weelderen, P.Eng. (Non-Practicing), CD is a Dutch-Canadian soldier, engineer, husband, father, and writer. After emigrating to Canada from the Netherlands at age seven, Floris went on to graduate from Magee Secondary School (class of 1985). From there, he obtained a Bachelor of Science from the University of Calgary in 1990 and returned to Vancouver with his wife in 1999. For over 30 years, Floris practiced traffic engineering and transportation planning which culminated in his role of Senior Transportation Engineer and member of the Senior Leadership Team at Bunt & Associates Engineering Ltd.'s Vancouver office.

Floris published his first book "CITADELS OF THE WEST: Military architecture in British Columbia" in 2005 which was inspired by 24 years of military service with Vancouver's British Columbia Regiment (Duke of Connaught's Own). He is also a member of the Vancouver Historical Society and recently penned an article entitled "SIXTH REGIMENT WILL INVADE UNITED STATES" which details the travels of the 6th Regiment, Duke of Connaught's Own Rifles to Seattle's 1909 Alaska-Yukon-Pacific Exposition.

Also a member of the Vancouver Maritime Museum as well as the Steamship Historical Society of America, Floris decided to draft this compendium to "A LENS ON VANCOUVER'S PAST: Walter Frost's Holland-America Line (1920-1975)" after curating a photo micro-exhibition of the same name (Vancouver Maritime Museum: December 2020 – March 2021). The exhibition resulted after Floris stumbled across Walter's extensive body of work while chronicling his father's 1960s adventures as a 3e Stuurman (3rd Mate) aboard Holland-America Line freighters and ocean liners. Many of Walter's photos were used in this compendium.

BIBLIOGRAPHY

City of Vancouver Archives - https://searcharchives.vancouver.ca

Crew Size and Maritime Safety (Washington, D.C.: National Academy Press, 1990)

Delgado, James P. *Waterfront: the illustrated Maritime Story of Greater Vancouver* (North Vancouver: Stanton, Acton & Dosil Publishers, 2009)

Kemp & Young *Notes on Cargo Work, Third Edition* (London: Stanford Maritime, 1977)

Levinson, Marc *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger, Second Edition* (Princeton: Princeton University Press, 2016)

Luxton, Donald *Ballantyne Pier Statement Of Significance / Heritage Impact Assessment* (Vancouver: Donald Luxton & Associates Inc., September 2016)

Luxton, Donald *Rogers Sugar Warehouse Heritage Impact Assessment* (Vancouver: Donald Luxton & Associates Inc., September 2016)

Miller, William H. *First Class Cargo: A history of combination cargo-passenger ships* (Stroud: The History Press, 2016)

Miller, William H. *Handling Cargo: Freighters of the 1950 and '60's* (Stroud: The History Press, 2018)

Stichting Maritiem-Historische Databank - https://www.marhisdata.nl

Talbot-Booth, Lieut-Comdr. E.C. *WHAT SHIP IS THAT?* (New York: Didier Publishing Company, 1944)

Talbot-Booth, Lieut-Comdr. E.C. *Merchant Ships 1963* (Liverpool and London: The Journal of Commerce and Shipping Telegraph Ltd, 1963)


pictured
including
Harbour
Korendyk
Burrard
October
Prinsendam
vessel
Rotterdam
GRT
crew
Coast
Weelderen
Single
taking
July
voyage
FIGURES
FACTS
M.S
cargo-passenger
Number
service
steam
Victory
passenger
load
grain
Netherlands
Moerdyk
began
Length
North
PHOTO
Ballantyne
Grain
Years
Capt
NRT
hours
Propulsion
Kingposts
Hull
TECHNICAL
Handling
Walter
van
tons
Archives
also
passengers
INTERESTING
SHIP
two
Second
Delftdyk
Complement
kts
first
N.V
vessels
former
oil-fired
port
Canada
War
Combination
without
Year
Holland-America
ships
Pier
fuel
ship
Canal
Cube
three
engine
cruise
September
water
general
one
Lapointe
Eerndyk
Service
large
flag
ft
Tonnage
cu
Frost
Shipbuilder
Los
VANCOUVER
screw
DATA
used
America
many
turbine
West
Europe
Photographer
Passengers
Pacific
cargo
HAL
Vancouver
room
U.S.A
Angeles
Inlet
apk
engines
Speed
class
Floris
General
built
Bale
B-C
liner
City
Masts
Island
S.S
LINE
Dinteldyk
Line
CVA
space
Cargo
refrigerated
ports
CPR
Type
Delivered
HOLLAND-AMERICA
Damsterdyk
holds
capacity
World
deck
freighters
April
diesel
boilers
loading
Scrapped

ENDNOTES

[i] The American Association of Port Authorities, Inc. *Port Design and Construction* (Washington, DC: AAPA, 1964) p 13
[ii] Ibid.
[iii] Dooley, M.K. 'Our Mickey': The Story of Private James O'Rourke, VC, MM (CEF), 1879-1957 *Labour / Le Travail, vol. 47, 2001*, pp 171–184
[iv] *No. 30372. The London Gazette (Supplement)* (London, UK: November 6, 1917) p. 11569.
[v] Dooley, M.K. Ibid.
[vi] https://pasttensevancouver.wordpress.com/tag/battle-of-ballantyne-pier/ Accessed July 26, 2022
[vii] Gravett, P. Vancouver's heritage rooted in our waterfront *The Vancouver Sun* (Vancouver, BC: August 4, 2018)
[viii] Mainland Fire Underwriters' Association. *Vancouver, B.C. Water Front Map* (Vancouver, BC: MFUA, 1919) Map 1
[ix] Hamilton, J.H. THE "ALL-RED ROUTE," 1893-1953: A History of the Trans-Pacific Mail Service between British Columbia, Australia, and New Zealand *British Columbia Historical Quarterly, No. 20* (Vancouver, BC: UBC, 1956) p 1
[x] https://search.nbca.unbc.ca/index.php/demolition-of-former-cpr-pier-in-vancouver
[xi] http://komagatamarujourney.ca/ accessed August 28, 2022
[xii] Johnston, W. et al. *The Seabound Coast: The Official History of the Royal Canadian Navy, 1867–1939. Vol. 1* (Toronto, ON: Dundurn Press, 2010) pp 289-299
[xiii] http://komagatamarujourney.ca/ accessed August 28, 2022
[xiv] Vanterpool, A. *Silk Trains of North America* (Edmonton, AB: Alberta Pioneer Railway Association, 2010) p 32
[xv] https://gatewaygazette.ca/silk-train-part-canadas-history/ Accessed August 30, 2022
[xvi] Vanterpool, A. Ibid., p 33
[xvii] *Times Colonist* (Victoria, BC: July 22, 1927) P 12
[xviii] *The Province* (Vancouver, BC: July 4, 1927) p 4
[xix] *The Province* (Vancouver, BC: August 27, 1926) p 26
[xx] Hagelund, W.A. *Harbour Burning* (Surrey, BC: Hancock House Publishers, 2002) pp 140-142
[xxi] https://vancouverhistory.ca/events/the-greenhill-park-explosion/ Accessed September 11, 2022
[xxii] https://www.canadaplace.ca/about-us/history/ Accessed September 11, 2022
[xxiii] *The Vancouver Sun* (Vancouver, BC: March 10, 1983) p 1
[xxiv] *The Vancouver Sun* (Vancouver, BC: May 1, 1986) p 17
[xxv] https://www.canadaplace.ca/about-us/history/ Accessed September 11, 2022
[xxvi] https://www.portvancouver.com/environmental-protection-at-the-port-of-vancouver/climate-action-at-the-port-of-vancouver/shore-power/ Accessed December 24, 2022
[xxvii] *The Province* (Vancouver, BC: October 5, 1917) p 21
[xxviii] *The Province* (Vancouver, BC: May 31, 1913) p 2
[xxix] *The Vancouver Sun* (Vancouver, BC: April 6, 1913) p 70
[xxx] *The Province* (Vancouver, BC: January 30, 1917) p 17
[xxxi] *The Province* (Vancouver, BC: July 27, 1938) p 1
[xxxii] *The Vancouver Sun* (Vancouver, BC: July 27, 1938) p 1
[xxxiii] *The Province* (Vancouver, BC: July 28, 1938) p 1
[xxxiv] *The Province* (Vancouver, BC: May 29, 1907) p 1

[xxxv] *The Province* (Vancouver, BC: May 8, 1920) p 5
[xxxvi] van Weelderen, F. Sixth Regiment Will Invade United States, *The Duke Volume 2, Issue 21* (Vancouver, BC: BCR (DCO) Association, April 2020)
[xxxvii] *The Province* (Vancouver, BC: June 14, 1910) p 8
[xxxviii] http://www.butchartgardenshistory.com/evans-coleman-evans/ accessed May 28, 2022
[xxxix] *Vancouver Daily World* (Vancouver, BC: June 1, 1899) p 1
[xl] *The Vancouver Sun* (Vancouver, BC: June 7, 1920) pp 1-2
[xli] *The Vancouver Daily World* (Vancouver, BC: June 22, 1920) p 11
[xlii] *The Province* (Vancouver, BC: July 19, 1956) p 19
[xliii] Ellis, C.R. *"Preserving the 'Glory of the Past' : The Native Daughters of British Columbia and the Construction of Pioneer History in the Hastings Mill Museum"* (Vancouver, BC: University of British Columbia, 2002) p 27
[xliv] https://hastingsmillmuseum.ca/reconciliation Accessed June 14, 2022
[xlv] https://hastingsmillmuseum.ca/our-history Accessed October 23, 2022
[xlvi] Ibid.
[xlvii] Lawrence, J.C. *Markets and Capital: A history of the Lumber Industry of British Columbia (1778-1952)* (Vancouver, BC: University of British Columbia, 1957) p 100
[xlviii] https://hastingsmillmuseum.ca/reconciliation Accessed June 14, 2022
[xlix] Ellis, C.R. Ibid. p 28
[l] https://bcanuntoldhistory.knowledge.ca/1880/the-great-vancouver-fire accessed on January 15, 2023
[li] Delgado, J.P. *Waterfront: the illustrated Maritime Story of Greater Vancouver* (North Vancouver, BC: Stanton, Acton & Dosil Publishers, 2009) p 134
[lii] *The Province* (Vancouver, BC: August 24, 1966) p 13
[liii] *The Province* (Vancouver, BC: May 30, 1970) p 24
[liv] http://www.navsource.org/archives/08/08242.htm accessed October 20, 2022
[lv] *The Province* (Vancouver, BC: August 15, 1964) p 19
[lvi] *The Province* (Vancouver, BC: June 19, 1970) p 19
[lvii] *The Province* (Vancouver, BC: November 14, 1970) p 22
[lviii] Donald Luxton & Associates *Ballantyne Pier Statement of Historical Significance/Heritage Impact Assessment* (Vancouver, BC: Vancouver Fraser Port Authority, September 19, 2016) pp 4-7
[lix] *The Calgary Daily Herald* (Calgary, AB: September 9, 1927) p 21
[lx] Dooly, M.K. Ibid.
[lxi] *The Province* (Vancouver, BC: August 2, 1962) p 3
[lxii] *The Province* (Vancouver, BC: September 27, 1962) p 15
[lxiii] https://www.kiewit.com/projects/ballantyne-pier-redevelopment/ accessed on September 23, 2022
[lxiv] *The Province* (Vancouver, BC: February 13, 1970) p 25
[lxv] *The Province* (Vancouver, BC: February 18, 1983) p 23
[lxvi] AECOM, *Centerm Expansion Project Draft Soil Management Plan* (Vancouver, BC: Vancouver Fraser Port Authority, September 19, 2016) p 3
[lxvii] AECOM, *Centerm Expansion Project Marine Transportation Impact Study* (Vancouver, BC: Vancouver Fraser Port Authority, October 26, 2016) p 1
[lxviii] https://www.dpworldcanada.com/news_posts/dp-world-completes-vancouvers-first-container-vessel-shore-power-connection/ accessed January 8, 2023
[lxix] *The Province* (Vancouver, BC: March 24, 1970) p 15
[lxx] *The Province* (Vancouver, BC: May 30, 1970) p 24

[lxxi] Levinson, M. *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger, Second Edition* (Princeton: Princeton University Press, 2016) p 45
[lxxii] *The Province* (Vancouver, BC: March 5, 2015) p 3
[lxxiii] *The Province* (Vancouver, BC: June 1, 1912) p 13
[lxxiv]*The Vancouver Sun* (Vancouver, BC: February 17, 1914) p 2
[lxxv] *The Vancouver Sun* (Vancouver, BC: April 6, 1914) p 52
[lxxvi] *The Province* (Vancouver, BC: September 8, 1966) p 16
[lxxvii] *The Vancouver Sun* (Vancouver, BC: December 1, 1943) p 16
[lxxviii] *The Vancouver Sun* (Vancouver, BC: December 18, 1947) p 1
[lxxix] https://vancouvertraces.weebly.com/bc-sugar.html accessed September 16, 2022
[lxxx] *The Province* (Vancouver, BC: May 9, 1957) p 7
[lxxxi] https://vancouvertraces.weebly.com/bc-sugar.html accessed September 16, 2022
[lxxxii] *The Vancouver Sun* (Vancouver, BC: September 18, 1972) p 1
[lxxxiii] *The Province* (Vancouver, BC: November 30, 1977) p 23
[lxxxiv] https://canadiansailings.ca/west-coast-terminals-2/ accessed September 25, 2022
[lxxxv] Transportation Safety Board of Canada *Marine Transportation Safety Investigation Report M19P0020* (Ottawa, ON: TSB, November 5, 2020) pp 39-40
[lxxxvi] https://bc.ctvnews.ca/new-cargo-cranes-floated-under-lions-gate-bridge-at-low-tide-1.5209409 accessed October 12, 2022
[lxxxvii] https://dailyhive.com/vancouver/vanterm-terminal-container-expansion-new-cranes accessed October 11, 2022
[lxxxviii] *The Vancouver World* (Vancouver, BC: January 19, 1915) p 1
[lxxxix] *The Vancouver Sun* (Vancouver, BC: February 22, 1924) p 3
[xc] *Pacific Terminal Shipping Upgrade Project Community Engagement Summary Report* (Vancouver, BC: Viterra, September 4, 2014) p 16
[xci] Everitt, J. et al. The Early Development of Terminal Grain Elevators on Canada's Pacific Coast *Western Geography*, *15/16*, (Victoria, BC: Western Division of the Canadian Association of Geographers, 2006) pp 28–52
[xcii] *The Vancouver Evening Sun* (Vancouver, BC: March 13, 1924) p 14
[xciii] *The Vancouver Sun* (Vancouver, BC: October 30, 1962) p 21
[xciv] *The Province* (Vancouver, BC: October 30, 1962) p 1
[xcv] *The Province* (Vancouver, BC: October 19, 1928) p 1
[xcvi] https://canadiansailings.ca/west-coast-terminals-2/ accessed September 25, 2022
[xcvii] *The Province* (Vancouver, BC: October 5, 1928) p 1
[xcviii] *The Vancouver Sun* (Vancouver, BC: October 6, 1928) p 44
[xcix] *The Province* (Vancouver, BC: August 25, 1994) p 1
[c] Hagelund, W.A. Ibid. pp 184-187