

Digging Out and Filling In **Making Land on the Toronto Waterfront in the 1850s**

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Volume 20, numéro 1, juin 1991

URI : <https://id.erudit.org/iderudit/1017560ar>

DOI : <https://doi.org/10.7202/1017560ar>

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Éditeur(s)

Urban History Review / Revue d'histoire urbaine

ISSN

0703-0428 (imprimé)

1918-5138 (numérique)

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Citer cet article

McIlwraith, T. (1991). Digging Out and Filling In: Making Land on the Toronto Waterfront in the 1850s. *Urban History Review / Revue d'histoire urbaine*, 20(1), 15–33. <https://doi.org/10.7202/1017560ar>

Résumé de l'article

Dans les années 1850, le long des quais de Toronto, le chemin de fer et des implantations commerciales occupaient 500 000 mètres carrés (50 hectares). Dans le cadre de cet important projet, l'abaissement du terre-plein au sud de la rue Front fut la principale source du remblai de la Baie (de Toronto). Toutefois, ni les wagons ni les dragues ne suffirent pour apporter les matériaux supplémentaires nécessaires à la construction des installations portuaires prévues, et de nombreuses portions de rive du lac restèrent mal remblayées pendant des dizaines d'années. Les terrains ainsi créés n'étaient en fait qu'un sous-produit d'intérêts commerciaux égoïstes à court terme, soutenus par un conseil municipal qui ne s'intéressait qu'en apparence à un aménagement de la rive en parc.

Digging Out and Filling In:

Making Land on the Toronto Waterfront in the 1850s

Thomas McIlwraith

Abstract

A half-million square metres (50 hectares) was brought in to railroad and commercial use at wharfage-level along the Toronto lakefront during the 1850s. This major engineering project involved cutting down the terrace south of Front Street, and this was the source of most of the fill dumped into the Bay. Neither railroad cars nor harbour dredges were capable of delivering the additional material necessary for building anticipated port lands, and many parts of the waterfront remained improperly filled for decades. The land-area that was created should be regarded as a byproduct of short-run, selfish commercial interests, abetted by a City Council that gave only lip-service to the concept of a parklike lakefront.

Résumé

Dans les années 1850, le long des quais de Toronto, le chemin de fer et des implantations commerciales occupaient 500 000 mètres carrés (50 hectares). Dans le cadre de cet important projet, l'abaissement du terre-plein au sud de la rue Front fut la principale source du remblai de la Baie (de Toronto). Toutefois, ni les wagons ni les dragues ne suffirent pour apporter les matériaux supplémentaires nécessaires à la construction des installations portuaires prévues, et de nombreuses portions de rive du lac restèrent mal remblayées pendant des dizaines d'années. Les terrains ainsi créés n'étaient en fait qu'un sous-produit d'intérêts commerciaux égoïstes à court terme, soutenus par un conseil municipal qui ne s'intéressait qu'en apparence à un aménagement de la rive en parc.

Stand at the foot of Portland Street, Toronto, on the broad Front Street terrace on a sunny June morning, and call it 1850. The setting is low and flat, quiet and very nearly uninhabited. To the west, the Old Fort lies behind overgrown embankments, northward trees and fields absorb a few modest dwellings, eastward the old Parliament house (later an asylum) stands dourly in its grounds, and beyond it rises the boring skyline of a very provincial town. To the south, thrown into shallow perspective by a low embankment, the Bay: a fine blue sheet of water stretching out a kilometre and circumscribed by the low, willow-green line of the Peninsula. Two schooners lie at the Queen's Wharf off Bathurst Street, a bold plank-and-cribwork projection offering slight definition to the Bay at its opening to the west. Smaller wharves poke into the water further up towards the townsite, and a lone schooner beats its way out against a gentle westerly breeze.

It takes a keen mind's eye to imagine this shoreline scene known in 1991 as the railway lands, a bleak dumping ground with the elevated Gardiner Expressway and high-rise buildings obscuring the water altogether. At least as far back as 1818, when the first lots were laid out for development southward from the shore, Toronto Bay has been regarded as an appealing zone of encroachment. Generations of citizens were following precedents set in Boston, New York and waterfront towns throughout eastern North America. This paper is concerned with the physical redefinition of Toronto's lakefront prior to Confederation.

During the 1850s the northerly shoreline of Toronto Bay moved south, and by 1858 the gently sloping beach had been replaced by a sharp edge

well over a metre above the waterline and three below. [Figure 1] The spectator on Portland Street would have gazed across 200 to 300 m of railroad yards and shops, while eastward from Spadina Avenue (known then as Brock Street) to Frederick Street the water's edge was fully 100 m south of Front Street. From there the new land gradually narrowed until terminating at the Gooderham distillery site at Trinity Street. These dimensions enclose an area south of Front and east from Bathurst nearly to the Don River of more than 660,000 square metres (66 hectares). With the exception of piers that had been gradually fingering their way out into the Bay since before 1800, this was all new real estate.

To fill up the area within these limits to a uniform height of one metre above the waterline would require 840,000 cubic metres, or nearly 1.1 million cubic metres if filled to 1.3 m, as seems more probable. This latter figure corresponds, for example, to some 350 wagonloads of fill delivered daily for more than ten years! Had all filling been done within the most active construction period, 1852 to 1857, the picture of frenzied activity taxes the imagination: streams of wagons competing for space up and down the lakefront to manoeuvre into position for tipping spoil day after day, year in and year out.

This project could scarcely have gone unnoticed, and the politics of it are extensively documented and have been thoroughly scrutinized by Frances Mellen. Yet—remarkably—the physical exploit has been ignored. Was construction too obvious to record, or did it proceed unobtrusively, maybe as a byproduct of some other activity? Has something of fundamental significance been missed? We turn to investigate the demand for this artificial land,

Digging Out and Filling In

the sources of the fill, and how much really was needed to achieve goals users had set for themselves. Railway construction in the 1950s and a very extensive shore bluff west of Simcoe Street—the Ontario Terrace [Figure 2]—figure prominently. I shall argue that the Ontario Terrace was stripped down to the level of a commercial wharf and the surplus deposited in the Bay, creating new real estate and thereby fostering further commercial and transport opportunities on the Toronto lakefront.

Land Area Needed

Contrasting interests of merchants and public-spirited citizens converged along the Toronto waterfront as the 19th century advanced. Merchants looked for

profitable opportunities to transfer goods across the boundary between land and water, and were interested in piers and warehouses. The public spirits were interested in the strandline itself, and a beach, public walkways, viewpoints and a handsome civic backdrop were important to them. Both groups saw scope for achieving their ends by making new land. No venture was too grand, given the anticipated overall growth and maturity of Upper Canada, and an intense rivalry developed.

Lakeshore lot holders were clearly in the merchant camp. An 1827 plan for the lakefront between Yonge and Church streets, for instance, shows “the building and water lots ... proposed for sale to defray the expense of building a quay.”

Some 15,000 square metres came into being at this time, plus another 10,000 for proposed piers, shown in place in the Howard plan of 1846. [Figure 3] If we add in a further 42,000 square metres of wharfage (mostly east of Church and at York Street) and 17,000 for jetties, we can account for one-eighth of the 66 hectares even before the big push of the 1850s.

Toronto was the capital of Upper Canada and in 1834 became its first incorporated city. Expressions of civic pride and urban design focused on the waterfront, and Bonnycastle’s plan (1834) is an early statement. [Figure 4] The Parliament House, a new Government House and the Garrison (Old Fort York today) are landmarks in a line from the occupied city westward to the huge military reserve

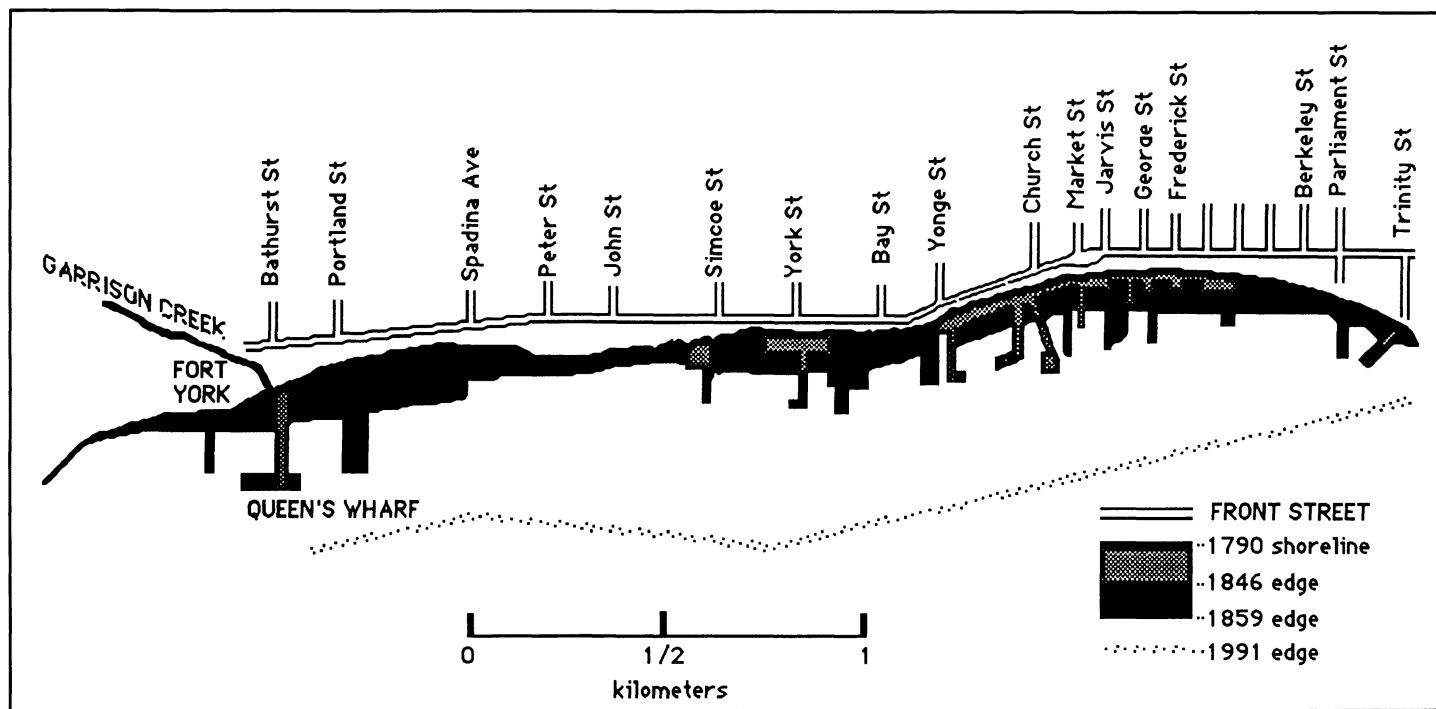


FIGURE 1: Toronto's Changing Shoreline, 1790-1991.

Digging Out and Filling In

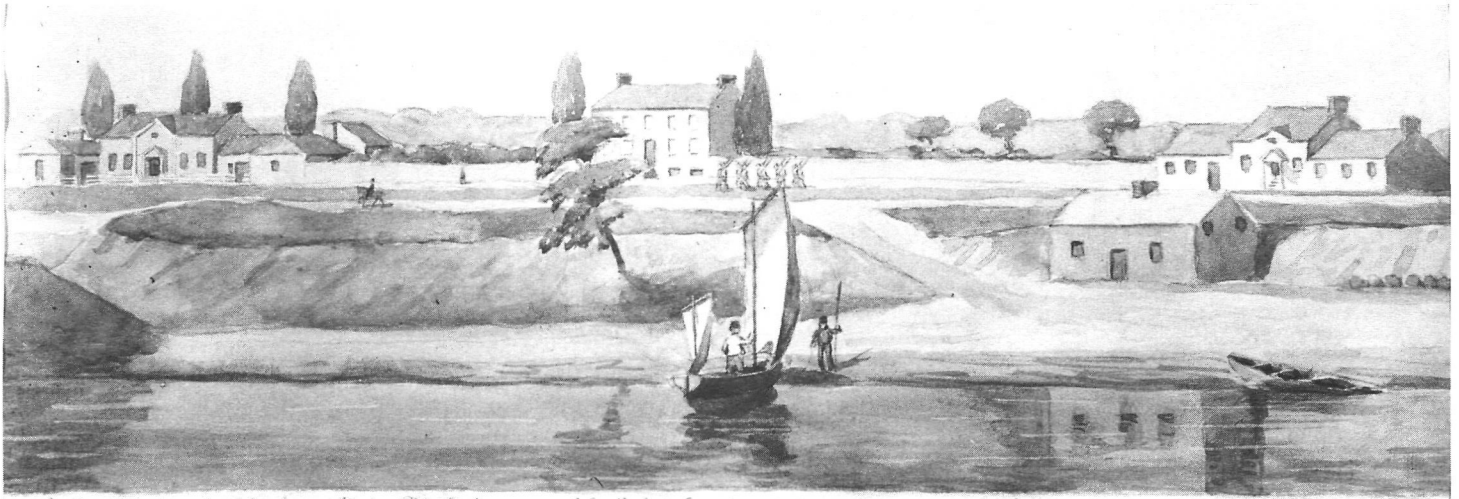


FIGURE 2:
Waterfront, York, between John and Peter Streets, ca 1820, by Robert Irvine.;
Metropolitan Reference Library, J. Ross Robertson Collection, T 12566

parkland. They are linked by a "proposed esplanade" at the water's edge, and by space above the shore bluff "reserved for a public pleasure ground." The Hawkins map (1837) labels the Front Street area west of Spadina as "Ontario Terrace, reserved for the public as a promenade and pleasure ground." Howard's plan (1846) shows the Esplanade as a strip east of Simcoe Street, 30 metres wide and about 120 metres off shore. Various maps from 1833 onward show new offshore land at the bases of the jetties, leaving only occasional slips. A line of soundings on Howard's plan marks what became the limit for the extent of filling as of 1858.

The spirited citizens have left a rich archive of their thinking, but nothing showing on the ground. The merchants, on the other hand, spoke with a wharf here, a soap and candle factory there, and railway tracks everywhere. Their incremental, tangible responses to economic opportunities were quite without regard for hedonistic senti-

ments, and were many times sanctioned by the same civic activists who dreamed of a fashionable lakefront. The presence of railway directors, such as Mayor John Bowes, on City Council, exacerbated a sensitive subject. When individuals had to choose between aesthetics and business, there was no contest.

Toronto's first railways were built in an amphibious era, when cargoes followed mixed water and land routes. [Figure 5] Wharves and lake shipping were vital to such lines as the Northern Railway, a shortcut portage route to Georgian Bay and the upper Great Lakes opened in 1853-54. Rails and the first cars for the Northern came ashore at the Queen's Wharf late in 1852, and days later the first test train ran from that point northward a few kilometres through the Garrison Creek Ravine. Plans for workshops inland and purchase of "lands in [Toronto's] suburbs suitable for factory purposes" suggest that the company was committed only to a tiny seg-

ment of the Toronto lakefront.

The portion of the Grand Trunk line westward from Toronto was chartered as the Toronto & Guelph Railway, with plans to go on to Goderich (actually Sarnia, as it turned out). The T&G thus occupied the same traffic niche as the Northern, and was destined to compete with it for Lake Ontario vessels carrying export grain eastward. Before construction started in 1853, chief engineer Walter Shanly aroused excitement by voicing his dream of a "future Marine Depot of vast extent, taking in, I should say, the whole navigable front of the city." The terminus on the south side of Fort York at Gzowski's Wharf indicates, however, that the activity would at least initially be centred well away from the city, and be no more an imposition upon the public pleasure ground that was the Northern.

The line between Toronto and Hamilton was part of the Great Western, Canada's most ambitious railway project about 1850.

Digging Out and Filling In

Chart
of the
NORTH SHORE OF TORONTO

AND PLAN OF THE WHARVES AND STOREHO

Surveyed by Mr
John Howard
D.P. Surveyor
Toronto.
1846.

0 1 2 3 4 5 6 7 8 9 1000
Scale of 1000 feet.



FIGURE 3:
Detail from John Howard map of Toronto, 1846. Metropolitan Toronto Reference Library, map collection.

Digging Out and Filling In

ARBOUR,

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Digging Out and Filling In

The H&T was well-positioned to intercept both Northern and T&G traffic in the Bathurst Street area and divert it to the Hamilton waterfront. Toronto's hegemony over Hamilton was not yet established, and Hamiltonians saw the Toronto branch (as they cunningly dubbed the H&T) as an instrument for gaining the upper hand. The Northern in 1853 was an isolated stretch of track, and connection with the Great Western would give its rails an uninterrupted route across the Niagara Suspension bridge (1854) into the United States. Amphibiousness was being challenged, and the threat to the port of Toronto was real. The H&T shunned the Toronto waterfront, and its line, opened in 1855, terminated at a depot west of Bathurst Street, well over a mile from the central business area.

In 1852 the Toronto & Guelph was taken over by the Grand Trunk Railway. It would be a segment of that great spine of communication throughout the length of the Province of Canada, undercutting the anticipated influence of the Great Western at Toronto. The GTR planned to make Montreal (or, in the winter, Portland Maine) its point of transfer to vessels, and Toronto, like Port Hope, Cobourg, Kingston and a dozen other Lake Ontario towns, would be a mere way station on the route eastward. The GTR was therefore also inclined to distance itself from the Toronto waterfront, and had plans for routing its Guelph-to-Montreal line north of the built-up part of the city on the sort of alignment followed by the Ontario & Quebec Railway (Canadian Pacific) 30 years later. [Figure 5]

Advocates of the scenic waterfront seemed poised to carry the day. Instead, however, Shanly's dream of a sprawling marine depot prevailed, and in 1857 the last gap was closed in the railroad line between the mouth of the Don River and Fort

York. Railways took command of the lakefront because amphibiousness was a potent force. The scramble for hegemony among Lake Ontario towns would be settled on the waterfront and not in the suburbs, and Montreal and Hamilton had favoured the route behind as a ploy to dampen Toronto ambitions. Certainly the prosperity of the Northern depended upon the lake connection, but so did the city as a whole. Reciprocity with the United States (1854) reinforced north-south links, and Toronto could not allow Hamilton or any other Lake Ontario port to take command of the American trade.

A commercial port needed vast areas for, as Shanly put it, "curved sidings [that] can branch off to each wharf that may from time to time be constructed." There already was pressure on lakefront land as a result of the offer from City Council to the Northern of a station site at Jarvis Street and a suggestion that the company build its workshops on open space at the mouth of the Don River. This aroused fears that the Northern might monopolize the entire waterfront. A revised proposal to extend the Guelph line east from the Garrison to Yonge Street, "but only for passengers," was no appeasement, and annoyed merchants who could not imagine a waterfront line closed to freight. The author of a pamphlet in 1853, anticipating chaos, proposed that the rival companies jointly share tracks on a narrow corridor, described as an "insulated line of communication." Vocal citizens simultaneously redoubled their call for a public esplanade.

Space was at a premium, and ingenious minds set to arguing that commercial activity was itself pleasing to the eye. This sort of rationalizing underpinned Shanly's suggestion that land fill between York Street and the Queen's Wharf "would present a superb 'Esplanade', a site for

handsome and commodious warehouses and Public Buildings." Kivas Tully—city councilman, civil engineer, and spirited citizen—gave graphic expression to the idea of compatibility. [Figure 6] Handsome bridges would spring dramatically from the shore bluff out across a lake-level commercial area to the water's edge, where citizens could stroll. Tully was aware of the public fascination with trains and steamboats and had no difficulty in contemplating the two proudly mixing together in mutual admiration. Confirming this opinion, the Northern preempted much of the Ontario Terrace in 1852, while three years later the Hamilton and Toronto Railway celebrated its opening with a banquet in the Northern Railway freight house on the wharf and a fancy ball in their machine shop.

With the prospect of commercial rewards, and seeing the public reserve under siege, City Council resolved that the railway interests should undertake the land-filling as a gesture to the citizens. So it was that Gzowski and Company received a contract from the City early in 1854 "to construct the Esplanade, and to do all the filling-in to the north of it between Brock Street [ie, Spadina] and the mouth of the river Don." "Esplanade" meant roadway and tracks, rather in the style depicted in the Howard map. [Figure 3] Warehouses and other structures would be permitted on the land to be created between the Esplanade and the old shoreline.

Toronto's new lakefront took shape between 1852 and 1858, as some 490,000 square metres (49 hectares) were enclosed. It might have been 38,000 square metres greater, save for a redrawing of the plans late in 1853. The roadbed alignment was shifted about 15 metres north, saving Gzowski and Company material, but at the cost of space

Digging Out and Filling In

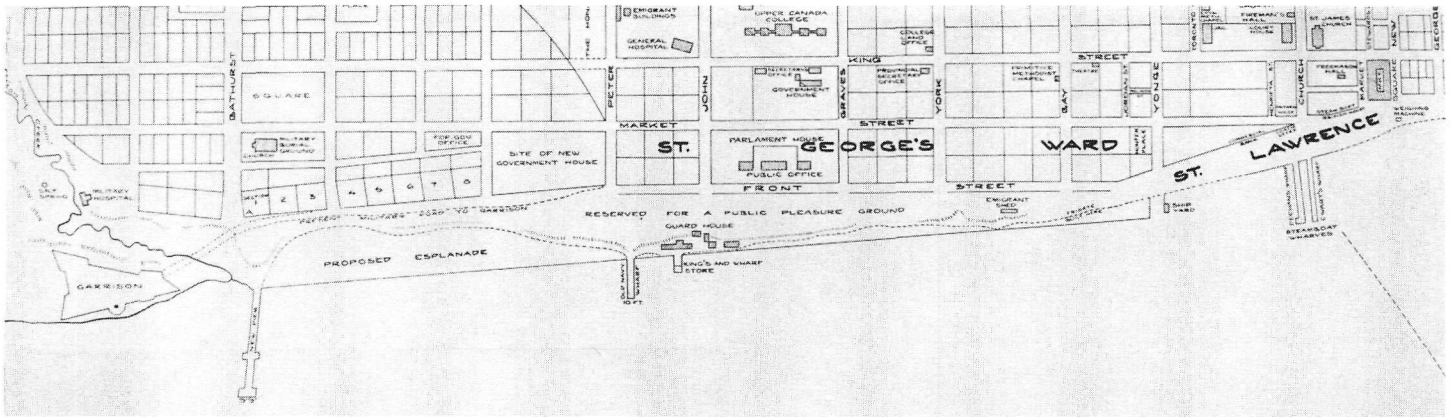


FIGURE 4:
Detail from H.W.J. Bonnycastle map of Toronto, 1834; Ontario Archives 342.

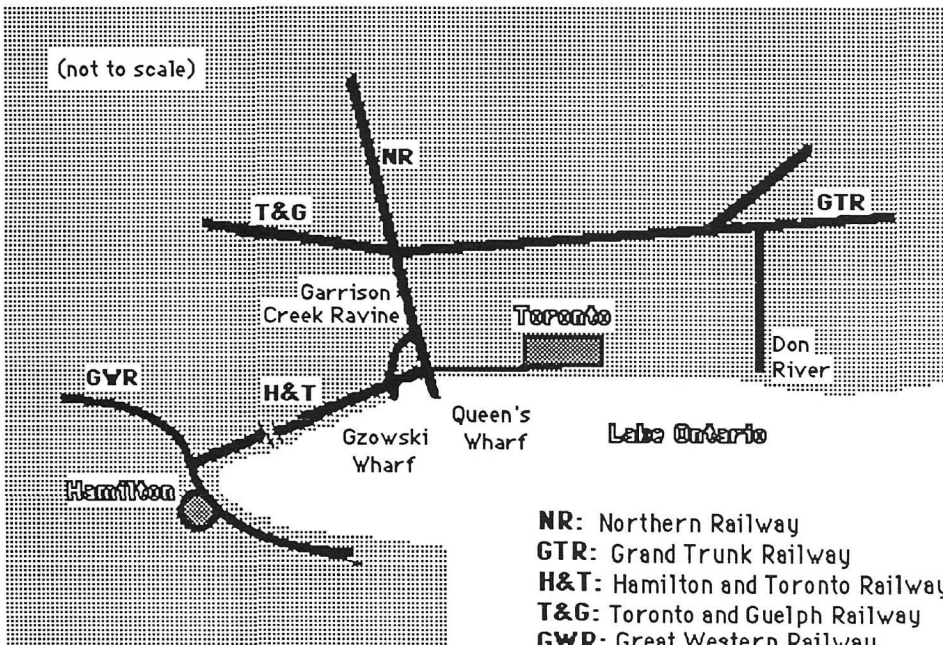
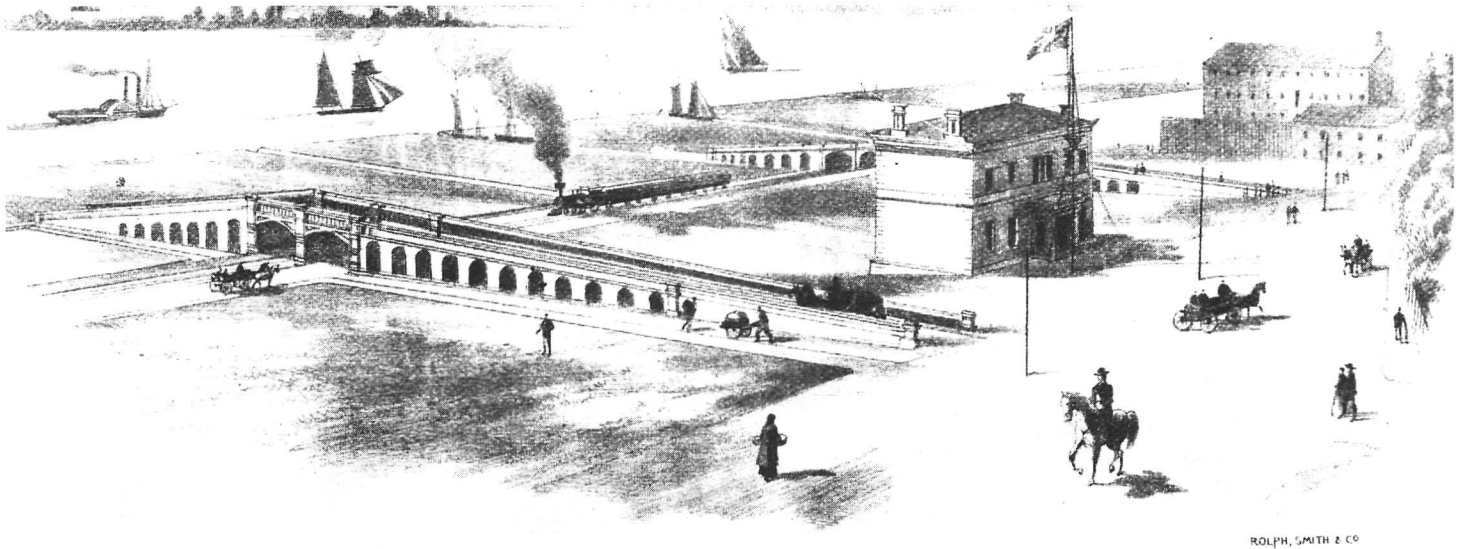


FIGURE 5:
The Toronto railway system as it was developing in 1852.

for pleasure or business activities. An off-shore dyke 30 metres wide, standing in three or four metres of water, ran east from Peter Street and formed the outer edge of the reclaimed area. Its southerly face was a stone-filled crib presenting a sheer edge against which vessels could tie up. This was the linear Esplanade anticipated by Howard in 1846. West of Peter Street lay the real Esplanade, a broad expanse slightly more than a metre above the lake level. Railroad trackage was laid on the southerly 12 metres and a public roadway on the northerly 18. East of Peter Street this 30 metre swath was at the water's edge; west of there it was set back against the base of the bluff.

Waterfront maps and plans of the later 1850s show large blank spaces that look like empty land, ready for buildings. [Figure 7a & 7b] They might seduce us into believing that filling had proceeded as intended, but there were contrary signals. A newspaper reported "unfilled sloughs" near Frederick Street in 1857, and legislation authorized the City to undertake un-

Digging Out and Filling In



TORONTO ESPLANADE,

THE DESIGN OF KIVAS TULLY, C.E.

(BIRD'S EYE VIEW FROM THE NORTH AMERICAN HOTEL.)

FIGURE 6:

Kivas Tully's Design for the Esplanade, 1853; Toronto Harbour Commission Archives, PC 15/3/743.

finished filling. To cope with "the baleful contributions of the sewers of the growing city" in 1858, Council reported a need for a pump for the Esplanade. The most thorough evidence of incomplete filling is found in a series of 100 exquisitely-rendered profiles of the lakebottom from the original shoreline outward to the south edge of the railroad grade. [Figure 8] Taken approximately every 10 metres between Trinity Street and Spadina, they show that a great deal of inside filling remained to be done as of late summer, 1858. Other than the 30 metre rail and road embankment, practically none of the work had been undertaken. The drawings were more than once used as courtroom exhibits by litigants attempting to sort out the complexities of defaulted responsibility. Testimony affirms that the

lagoon was not properly filled during the 1850s, and probably not for another 20 years.

For nearly two decades the Toronto waterfront had an emaciated appearance, pocked with little cesspools. Unfilled Grand Trunk lands east of Spadina in 1863 fit this image. Adam Wilson was elected mayor in January, 1859, riding a wave of indignation against the Company for having taken citizens for a ride of a different kind. They had become isolated by trains from the open lake and had to endure noxious effluents in the backwaters. It was an ugly place, bearing the face of unbridled entrepreneurial ambition quite in contrast with the airy sward dreamed of by supporters of the promenade.

Sources of Landfill

Landfill is a neglected commodity in our technological society. It is startling, for example, to read that in 1990 Marathon Realty (the real estate arm of Canadian Pacific) moved 500,000 cubic metres of fill from a few hectares of prime land near Union Station, "enough dirt to fill the Skydome." Marathon took this land, delivered from a Scarborough pit in the 1920s and inserted to a depth of 8 to 10 metres on top of fill placed in 1912, and planned to dump it near Barrie. Engineers manipulate topography with frightening ease today, but was such a volume of material available in the technological and economic conditions of the 1850s? We know that the scarcity of

Digging Out and Filling In

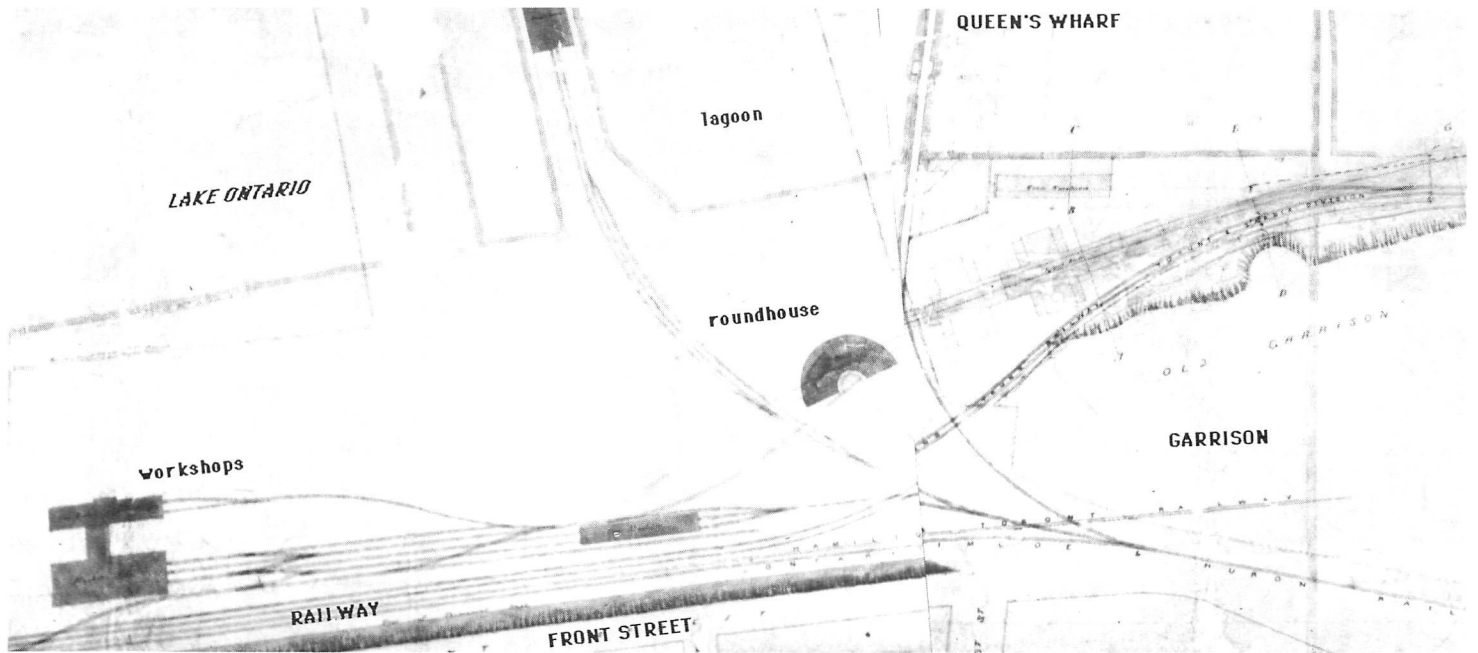


FIGURE 7a: *Railway Lands, Toronto, 1856; Map attributed to Sandford Fleming; Ontario Archives.*

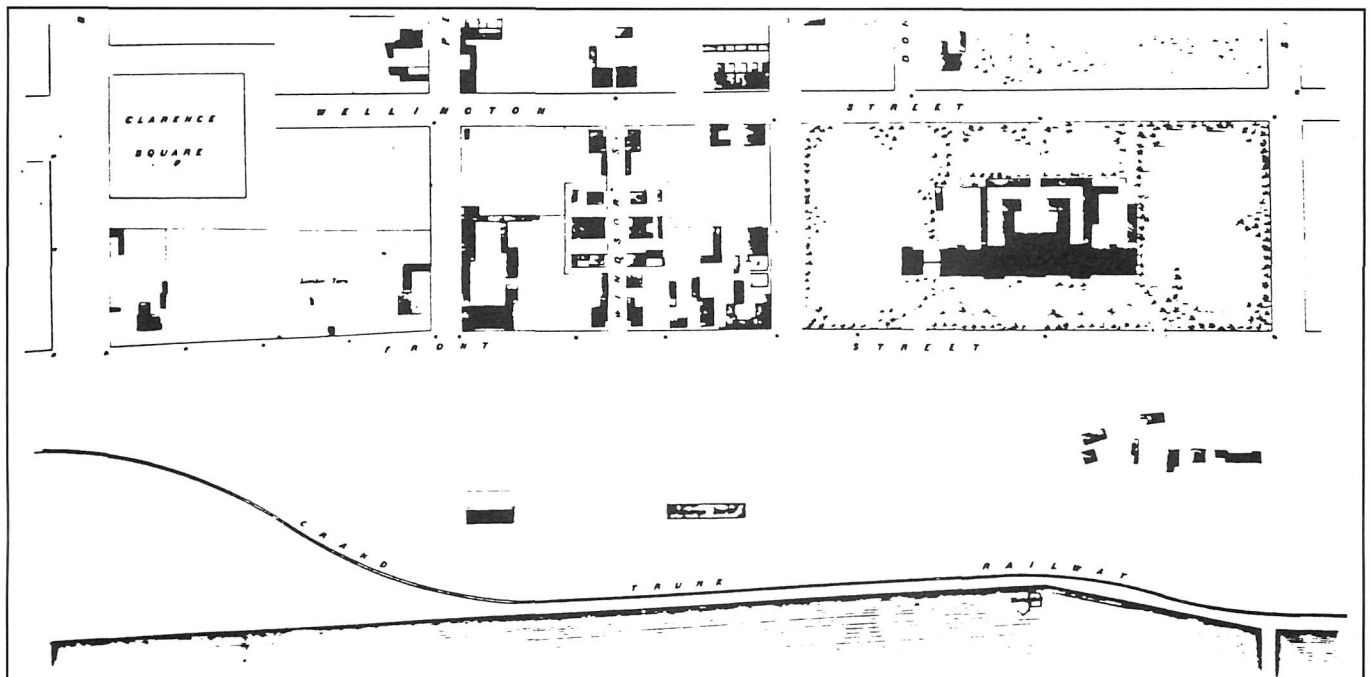


FIGURE 7b: *Plate 25 from Boulton Atlas: Lakefront at Peter Street, 1858; City of Toronto Archives.*

Digging Out and Filling In

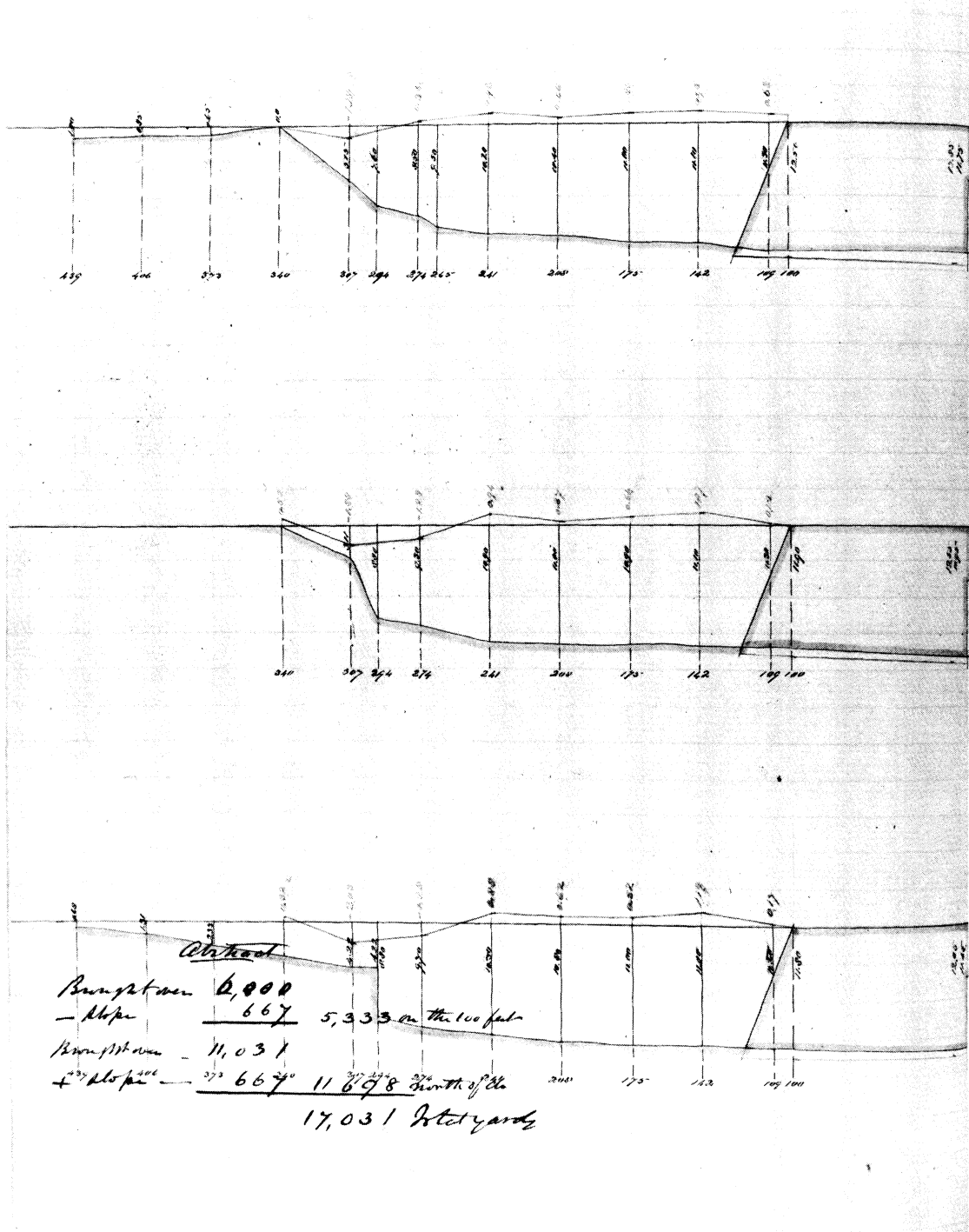


FIGURE 8: Cross-section through Lakefront, 1858; Toronto Harbour Commission Archives, RG 2/1, Vol. 7.

Digging Out and Filling In

space could be eased with filling, but the source of material to achieve that goal has not been at all obvious.

A checklist of potential sources of fill would include railroad excavations and gravel pits, lakefront dredging of sand and stone, ships' ballast, and forests for cribwork timbers. The material might have been bought on the open market or received as a byproduct of some other operation such as street grading or digging of cellar holes. Recent engineering core samples report predominantly sand in the deeper (older) parts, with much smaller quantities of clay, stone and wood. There have been occasional encounters with what appear to be wagon-loads of household garbage.

During the 1850s, nearly 100 km of railway line sliced through Ontario's glacial deposits, and one might suppose this would have been a bottomless pit for lakefront landfilling. Alas, it was not so. Ridges were cut down just enough to produce tolerable gradients, and the diggings pushed into adjacent low spots. Deeper ravines were bridged. Railways supplied only a slight amount of fill for the Toronto waterfront. "The stone was got partly from Scarborough heights [and] the sand came from a few miles east of the city" writes one citizen, and another remembered that they "brought the earth over the Grand Trunk." This material was most probably used to hasten completion of the GTR embankment from the Don River westward in 1856-57, the last gap in 640 km of line between Guelph and Montreal. Trains could deliver no more than 750 cubic metres a month on platform cars, so no matter how motivated the GTR might have been, its fill was only a bonus. A cynic would say that it was revenue-earning freight sold to lineside lot-owners. Railroads on the

Toronto waterfront were the beneficiaries of fill supplied by others, and not its donors.

Nor could the City help out much. Sewers, 5.5 square metres in cross-section, yielded 4800 cubic metres per km, but no more than 10,000 between 1852 and 1858. Several hundred cellar holes were dug in Toronto each year in the 1980s as the population grew from 30,000 to over 40,000. A hundred houses might yield 10,000 cubic metres, or easily 60,000 in all during the 1850s, but most of it was probably thinly spread around the building sites. Grade in downtown Toronto is fully a metre higher than originally, evident in basement windows of old downtown buildings almost buried in window-wells. The merchant who in 1849 made an approach to his wharf "by getting a quantity of scinders [sic] from the Water Works and filling in" expresses resourcefulness in a city with little byproduct landfill to spare.

The most efficient way of importing bulk cargo was by water. Of 5000 passages in and out of Toronto harbour in 1853, many were scheduled steamboats for mail and passengers, but 1012 are identified as "visits of wood and stone boats." If all 1012 had been coastwise stonehookers from Port Credit or Bronte, each carrying 50 tonne (25 cubic metres), in three seasons they might have delivered most of the 67,000 cubic metres of stone used as cribwork filling. Call it five seasons to allow for the 44,000 cubic metres of cribwork timber entering in the same period, and all of the timber and stone portion of the filling could have been delivered by water. Ship ballast is not included in this calculation, and it was far less important for shallow lake vessels than for the deep hulls of the high seas. Besides coal, salt, waterlime, and gravestones, as well as manufac-

tured goods, all performed this function.

Dredgings from the Bay was another possible source. For half a century a sand bar had been building up across the harbour entrance at the rate of 9,00 cubic metres per year. By 1854 it had reduced the breadth of the shipping canal from more than 450 metres to less than 75, threatening to close it off and destroy Toronto's bid for hegemony over Lake Ontario ports. Since the 1830s the Province had been operating dredges along Lake Ontario to keep river-mouth harbours clear of soil carried downstream and sands driven along the shore by storms. Almost the first initiative of the Toronto Harbour Commissioners after constitution in 1850 was to deal with the shoal, and by 1855 four dredges and a bevy of scows were available for an all-out assault. Expectations were slow to be fulfilled, however. By the 1860s, steam dredges were capable of excavating and loading 120 cubic metres of spoil daily, yet the THC dredge once put in 28 days lifting 803 cubic metres of sand. One contractor boasted of being able to move and sell 30,000 cubic metres in one season, but in his first year managed less than 5400.

Unloading inside an embankment was primitive. Deck (not dumping) scows were needed, and dredgings were "to be shovelled off ... as far inshore as the men can conveniently throw, and afterwards planks and barrows [are] to be employed ..." In 1858, water levels were high and the Commissioners rented the equipment to the City of Hamilton, as they did again the following year. By that time the Lake had breached the neck of the Peninsula (today's Eastern Gap) and the sense of urgency had passed. Of several hundred thousand cubic metres of sand available for fill, probably no more than 30,000 were used during the 1850s.

Digging Out and Filling In



FIGURE 9: Looking East Along Palace (Front) Street near Frederick Street, York, 1804, by E.F. Hale; Public Archives of Canada, Manoir Richelieu Collection #183.

The Ontario Terrace

These obvious sources account for no more than 164,000 cubic metres of fill out of 1.1 million sought. Transport cost precludes increasing the stone and timber estimate, while failure to exploit some 500,000 cubic metres of sand bar in the Bay seems to have been a matter of will rather than technology. Landfill prices in the mid-1850s were so low that it could hardly be given away. Yet fill was needed, so somewhere there must have been a

large, cheap and convenient source.

An 1804 painting offers an important, unremarked clue. [Figure 9] Trees are poised to topple over the edge of the eroding shore cliff onto the beach, evidence that the lakeshore had been destabilized during clearing for settlement 15 years earlier. A corroborative report describes trees on the bank at Jarvis Street being washed away before 1812. The eroded debris accumulating offshore was an increasing hazard to

navigation, and through the 1820s led to innumerable requests for a "breakwater pier." The Queen's Wharf, completed in 1833, seems to have been a less than adequate response, and through the 1840s citizens continued to throw brush "along the beach to keep the sand from washing away." We read that in the 1850s others were exacerbating the problem by "cutting down the banks of the Harbour and carting soil into the Bay without any breastwork, [doing] much mischief." Even as plans were under way

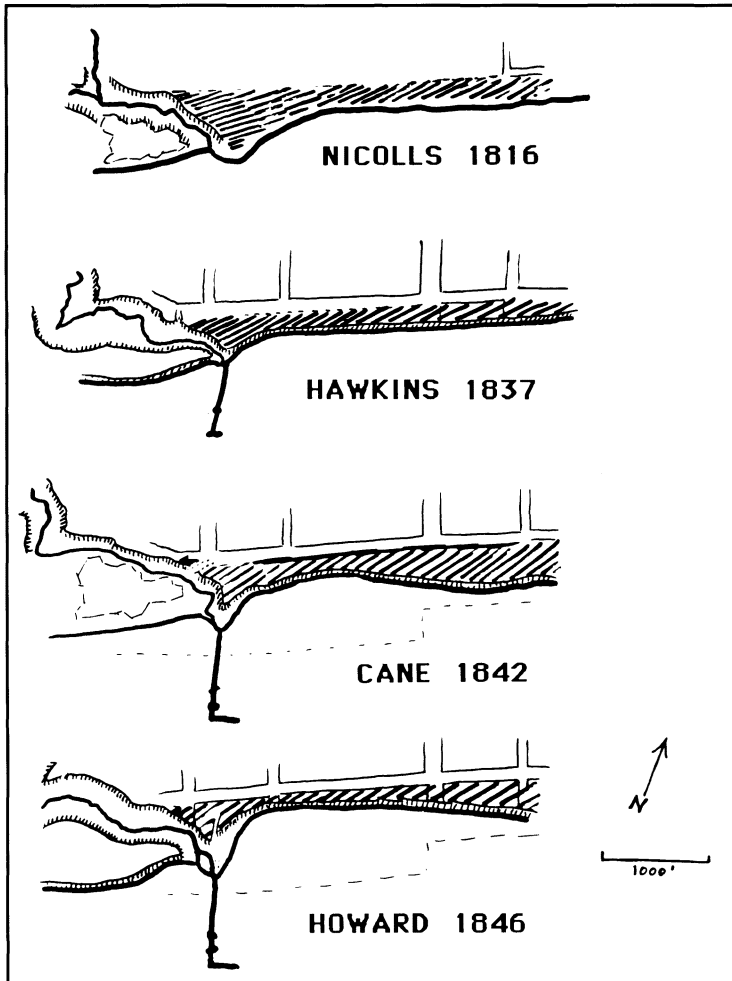


FIGURE 10: Various Versions of the Ontario Terrace; City of Toronto Archives.

for a broad walkway above the beach and lake level, that same land was fast sliding into the lake.

Opinions varied greatly as to the width of this tableland, Hawkins' "Ontario Terrace." Between Bay and Jarvis streets there is little doubt that it was always the width of one roadway only. [Figure 1] The Northern Railway had to encroach upon Front Street for its passenger platforms in 1854 because of insufficient room above the bank. Bartlett's familiar engravings of

the area around Church Street in the 1830s show buildings only a street's width from the bluff. Eastward to Berkeley Street, a wide promenade of 90 to 120 metres sloped gently towards the shore bluff, here reduced to little more than a metre above the beach and water.

West of Bay Street, the scene is far less clear. [Figure 10] Plans drawn between 1816 and 1846 place the drop-off as much as 200 metres south near Bathurst and 135 at John, and an 1852 map sug-

gests a second road on top of the bank, south of Front Street. Tully's view [Figure 6] is equivocal, while Scobie's proposed "general railway approach" is quite different. [Figure 11] It established the bluff close to a narrow (10 metres) Front Street roadway, as it is in 1992, requiring that "the entire area south of the Grand Terrace be reduced to the wharfage level." A sharp bank may not have existed along Front Street in 1852, but it certainly did very shortly thereafter. Shaving 4 metres off the top of the Ontario Terrace erodes completely the sanctity of the Ontario Terrace and dramatically alters the landfill calculation. Bringing the base level to 1.3 metres above waterline yields an estimated 660,00 cubic metres of material, and all of it was within a figurative shovel's throw of the Bay.

Reports of removing material from the Terrace are widespread. In November 1853, City Council advised that "applicants [should] be allowed to use so much as may be required of the earth on the reserved space in front of the Parliament Buildings for the purposes of filling out the Esplanade ..." One such applicant reports having done so, and another "hauled a quantity of earth from the Northern Railway Office, corner of Brock Street." Gzowski and Company were expected to buy "earth furnished by the City from the Bank" early in 1854. The following year the City was asking the province to grant rights for Gzowski to "excavate the whole of the Bank to the south side of Front Street," with the expectation of recovering 115,000 cubic metres of fill, and to pay Gzowski and Company for taking it. Plans called for construction of a retaining wall and parapet to prevent the collapse of Front Street once the excavation was complete.

Downcutting was an inconvenience to members of the Fort York Garrison used

Digging Out and Filling In

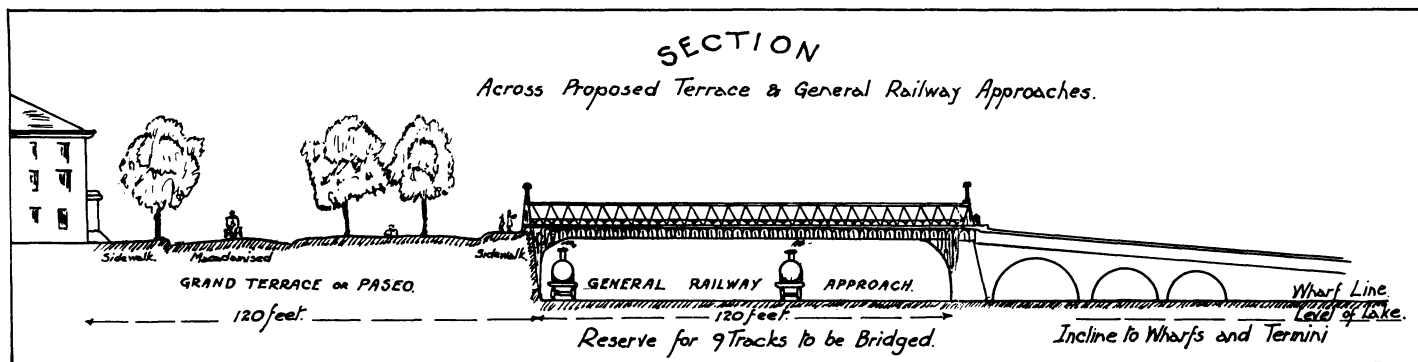


FIGURE 11: Cross-section of the Ontario Terrace. Drawing by “a member of the Canadian Institute”, Believed to be Hugh Scobie. Toronto Harbour Commission Archives, PD 2/1, Drawing #10267. First Published in Canadian Journal, Vol. (1852-53), opp. p. 233.

to passing freely through the area. In September 1853 a disgruntled officer wrote the Mayor: “I have the honor to call your attention to the very dangerous state of the Military Road leading from the old Barracks to the City, in consequence of the excavation now making by the Railroad—a perpendicular fall of 15 feet being left on the straight road quite unguarded, over which on a dark night both men and vehicles are very likely to walk or drive. Work went ahead rapidly, and much had been “graded and filled” by the middle of 1854.

All three railroads gained from cutting down the Terrace. By 1856, the Northern had reclaimed more than two hectares, or 15 per cent of its site, from the water, using excavated material. This was in addition to wharf-level land remaining where the Terrace had been stripped away. [Figure 7a] Down-cutting could not be achieved over night, however, and therefore the Northern laid a temporary line through to York Street in 1853 on top of the Terrace, gained by a steep grade at Bathurst Street. The original Toronto and Guelph terminus on the southwest edge of the Fort was separated from the City by open water at the mouth of Gar-

risson Creek, but able “to be formed into dry land by the material which must necessarily be excavated from the cut through which the Track is to be conducted to the water level.” Furthermore, the City required this “unwholesome land” to be filled at Northern expense. Gzowski and the GTR could easily be persuaded not to pass north of the city if others were to create a cheap lakefront passage for them. In an unsuccessful bid to avoid constructing the Esplanade, they subsequently tried to occupy city land east from Bay Street to a connection with the Montreal line at the Don River. It was worth trying to avoid moving fill even a short distance, but the terrace-level land in the eastern part of the city was already coming into use, and was not for sale.

Between Spadina and York, opposite the eastern part of the Terrace, filling north of the Esplanade embankment was more complete in 1858 than it was farther east, suggesting again the presence of a convenient, manageable source of fill. Relocation of the Northern’s Terrace-level tracks to the north side of Front Street east of Peter during 1856 may have been done to facilitate this excavation prior to the final

positioning of the rails below the Terrace in the following year. Removal of the Terrace left stable subsoil, and heavy structures such as workshops and roundhouses began appearing in this area in 1853. Despite pleas not to deface a public place, this part of the reclaimed lakefront was built upon more rapidly than were areas to the east.

The Ontario Terrace was pillaged by railways in quest of lake-level land. The debris conveniently formed new real estate at the lake, principally because indiscriminate dumping, without cribbed retaining walls, would have made the port useless for navigation. Instead of being a threat to Toronto’s rise to prominence on Lake Ontario, this new land enhanced it, and commercial activity blossomed during the 1850s. Cutting down and filling up reinforced each other, and it is difficult to unravel cause from effect. Technical and economic aspects of railroad operation encouraged stripping the Terrace, while the provision of an esplanade encouraged filling. Gzowski and Company appears to have profited both from removing land in one place and from filling it in elsewhere. Separate motives led to the same effect,

Digging Out and Filling In

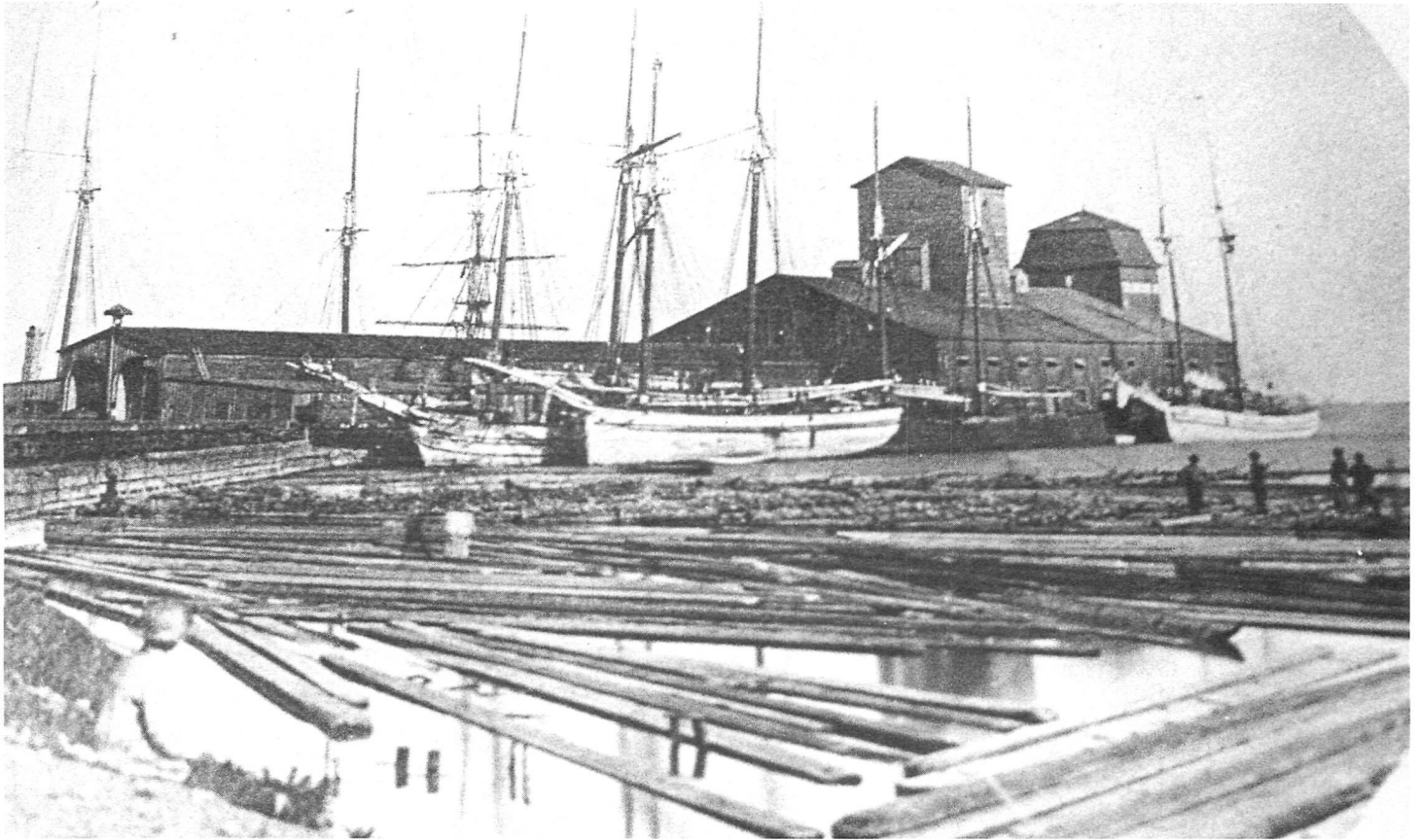


FIGURE 12: *Northern Railway Elevator and Lagoon East of Queen's Wharf, Toronto, ca 1875; Ontario Archives, Acc 14900-112*

but the railroads seem to have gained more than the aesthetes.

The Ontario Terrace supply of earth ran out before completion of the inside filling specified by the City. One quarter (275,000 cubic metres) of the total volume remained unfilled in 1858, equivalent to 100,000 square metres (10 hectares) of dry land. A 1.5 hectare timber storage basin on the Northern Railway grounds east of the Queen's Wharf accounts for 54,000 cubic metres. It was enclosed by a retaining wall 100 metres long, and its presence explains the logs in the foreground of Figure 12. In this

case there was no sewer contamination, and open water served a commercial function more satisfactorily than did solid land. The remaining 220,000 cubic metres may be discerned from the entries in the Earth Filling Book of 1858. Large numbers of private landings had become isolated from navigable water, and citizens had to endure the stench of ponded sewage where firm land should have been. The problem was brought under control by 1880, partly by filling and partly by footing buildings on the bedrock shales below the bottoms of the unfilled holes, and by extending sewers through to the open waters of the Bay.

Conclusion

Figure 13 summarizes the estimates presented in this paper. Of some 1.1 million cubic metres that should have been in place by 1858, one fifth of the work was done in small steps before 1850, mainly east of Yonge Street. More than half was added during the 1850s, and one quarter was "skipped" and only gradually finished over the next 30 years. By far the greatest portion—60 per cent—may be accounted for by stripping the Terrace, a reserve of material unnoticed by earlier writers. Ten per cent was timber and stone used for outlining the struc-

Digging Out and Filling In

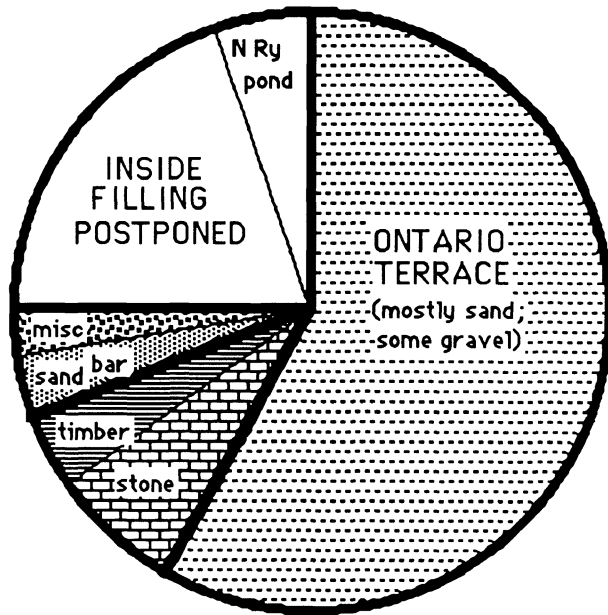


FIGURE 13: Summary of Toronto Waterfront Filling to 1859.

Toronto Waterfront Dimensions

Area of Toronto Waterfront:

South side of Front Street to crest of bluff, before excavation	180,000 m ²
Beach, west of Fort York to Gooderham's windmill	67,000
Waterfront, between 1791 shore and 1858 edge	427,000
TOTAL	674,000 m²

Volume of Toronto Waterfront:

Above 1.37 m above lakewater level, south of south side of 30 m Front Street allowance, based on depth 4 m above top of beach	660,000 m ³
Below 1.37 m above lakewater level beach of 1791	40,000
Waterfront, between 1791 and 1859 edges	1,057,000

Sources of Filling 1,097,000 m³

Ontario Terrace (ca 168,000 pre-1859)	660,000 m ³
Filled Cribs	
Stone (ca 18,000 pre-1850)	67,000
Timber (ca 12,000 pre-1850)	43,000
Peninsula sand bar dredging	max 30,000
City holes, rail backhaul, ship ballast	max 22,000
TOTAL	822,000 m³

Shortfall of 275,000 m³

Inside filling, not done by 1858	222,000 m ³
Northern Railway timber pond	53,000
TOTAL	275,000 m³

ture, and five per cent came from miscellaneous sources. The tidying-up later in the century probably used sand dredged out of the Bay by increasingly sophisticated equipment. This can be inferred from modern engineering samples that report three-quarters black alluvial sands of underwater origin, and a quarter tills and wood.

The written history of the Toronto waterfront lands has focused on great episodes—the Esplanade, Ashbridge's Bay, the Viaduct, the Island Airport, and Leslie Spit. All are fills, requiring huge volumes of earth and stone, and each, I would suggest, came about because there was a supply of material readily at hand. There is no evidence that anybody deliberately set out to fill up Toronto Harbour during the 19th century, but many seem to have found the lakefront a convenient place for dumping. The Terrace was the first such disposal problem. Excavation for buildings was another and, once construction of steel-framed office buildings grew common in the 1890s, no longer was it possible to spread out excavated spoil as if no one would notice. The lakefront became even more a handy dumping ground in the 20th century.

If there has been no Ontario Terrace, perhaps today's railway lands would not have existed. The Northern elevator would have been much closer to Front Street and its other facilities on the next cheapest land, well to the north of the city. The Grand Trunk would have been there too, and the birth of West Toronto Junction could have been a generation earlier. The Gardiner Expressway and GO-Transit service might also now follow the alignment through Summerhill. The Esplanade might then have developed as the intended public park, and the lagoons have been sweet-smelling landscaped attractions. Sewage

Digging Out and Filling In

problems would have been quickly resolved, and "Harbourfront" might have emerged in the City Beautiful period, some 80 years ago. Toronto's waterfront could have unfolded so very differently without the Terrace.

Stripping away the Terrace made sense in an economy with expensive labour and meagre capital. Entrepreneurs moved no more earth than necessary, as short a distance as possible, and placed it where it would do least harm. The huge reserve of sand in the Bay was not drawn upon simply for the sake of completing the job after the Terrace was used up. All action was predicated on cost-effectiveness, and commercial interests prevailed over recreational and aesthetic ones. Cutting down the Ontario Terrace was the most dramatic event in re-engineering the Toronto landscape in the preconfederation period. There would be more such episodes, decade by decade, as ever bigger excavations would leave their mark on the cityfront.

Acknowledgements

This paper was originally presented in Toronto in November 1989 at a seminar sponsored by the Toronto Harbour Commission and the Royal Commission on the Future of the Toronto Waterfront, David Crombie, Chairman. I would like to express my appreciation to the following persons for their help and encouragement: Rich Brown, National Archives of Canada; Paul Dilse, City of Toronto Archives; Gunter Gad, University of Toronto; Jim Lemon, University of Toronto; Roy Merrens, York University; Michael Moir, Toronto Harbour Commission Archives; Tim Orpwood, Hydrology Consultants; Victor Russell, City of Toronto Archives; Carl Vincent, National Archives of Canada; and Leon Warmiski, Ontario Archives.

Notes

1. Examples elsewhere, from Boston, eg....
2. Detailed calculations for the dimensions used throughout this paper are available from the author upon request. Many are based upon measuring from maps and plans, and dimen-

sions ought to be taken as orders of magnitude. For example, one engineer acknowledges having underestimated harbour depth, throwing off a string of calculations, and it happened all the time; *Globe*, Mar 24 1855. Measurements given in feet, yards, and acres have been converted to metric with rounding.

Commonly used abbreviations: CPWG (City of Toronto Committee on Public Walks and Gardens); CTA (City of Toronto Archives); CWH (City of Toronto Committee on Wharves and Harbours); GTR (Grand Trunk Railway); GWR (Great Western Railway); H&T (Hamilton & Toronto Railway); MTLB (Metropolitan Toronto Library Board); NAC (National Archives of Canada); NR (Northern Railway, formerly Ontario, Simcoe & Huron Railroad Union Company, or OS&HR); OA (Archives of Ontario, Manuscripts); OAMC (Archives of Ontario Map Collection); ROM (Royal Ontario Museum); T&G (Toronto & Guelph Railway); THCA (Toronto Harbour Commission Archives).

3. The height of wharf-level land, suitable for berthing vessels and transshipping cargoes, varies from one to two metres above water level, itself a varying datum through a metre or more. Measurements taken from the lakebed would be more satisfactory, at least prior to major siltation after 1850, but are very rare. A depth of 1.4 m is used here. CTA, Architectural Drawings, PT169C.10, undated, probably late 1830s; CTA, RG1/A, minute #320, Apr 2 1855, 17th page; CTA, RG5/E, p 37, undated; MTLB photograph, Union Station, 1873; Hugh Scobie, "General Plan of Arrangements for Railway Termini in the City of Toronto," *Canadian Journal*, 1 (May 1853), opp p 216; Walter Shanly to Hugh Richardson, Jan 28 1852, THCA, RG1/4, box 4 vol. 1.
4. Estimate is based upon one cubic metre per wagon, equal to 1.5 tonnes; THCA, RG1/4, box 3 folder 5, 1888. The town of Ogdensburg, New York, made 13 hectares of land - perhaps 630,000 cubic metres - in four years during the 1850s; THCA, RG1/4, box 4 vol 1.
5. Frances Mellen, "The Development of the Toronto Waterfront during the Railway Expansion era, 1850-1912" (unpublished dissertation, Department of Geography, University of Toronto, 1974.)
6. For reviews of Toronto's growth, see Eric Arthur and Stephen Otto, *Toronto, No Mean City*, revised edition (Toronto: University of Toronto Press, 1986); J.M.S. Careless, *Toronto to 1918: An Illustrated History* (Toronto: James Lorimer, 1984); and Donald Kerr and Jacob Spelt, *The Changing Face of Toronto* (Ottawa: Geographical Branch, Mines and Technical Surveys, 1965 [or 1973?]). Anecdotal material may be found in John Ross Robertson, *Landmarks of Toronto: A Collection of Historical Sketches ...*, 6 vols (Toronto: Author, 1894-1914), first published in *Canadian Journal* during the 1870s.
7. Its latest expression is *The Royal Commission on the Future of the Waterfront*; David Crombie, Chairman; 1988-91.
8. J. G. Chewett plan, 1827-28; OAMC, D-10. Waterfront lots and waterlots are not the same ...
9. H. J. Castle, untitled photostat of portion of map in NAC, Nov. 22, 1833; OAMC, D-9. William Hawkins, "Plan of the Military Reserve, Toronto ...," Mar 9 1836; OAMC, D-10.
10. Shanly, *Report on T&G 1852*, p 1.
11. For the statutory and corporate history of railways in Ontario, see A. W. Currie, *The Grand Trunk Railway of Canada* (Toronto: University of Toronto Press, 1957).
12. H. C. Seymour, *Report by the Chief Engineer to the Directors of the Ontario, Simcoe and Huron Railroad Union Company* (Toronto: Hugh Scobie, 1852), pp 8-10; OA, Pamph, Rail and Nav, Box 22(d). Frank N. Walker, *Four Whistles to Wood Up: Stories of the Northern Railway* (Toronto: Upper Canada Railway Society, 1953), p 23. Public service began in May 1853; see inscription on plaque, Union Station portico, Toronto.
13. Frederick W. Cumberland, *Report by the Chief Engineer to the Directors of the Ontario, Simcoe and Huron Railway Union Company* (Toronto: Hugh Scobie, 1853), p 6; OA, Pamph, Rail and Nav, Box 22(d). CTA, RG1/A, minute 17, Feb 9 1852.
14. Walter Shanly, *Chief Engineer's Report on the Toronto and Guelph Railway* (Toronto: Brewer, McPhail & Co., 1852), p 22; OA, Pamph, Rail and Nav, Box 23(f).
15. W. S. and H. C. Boulton, compilers, *Atlas of the City of Toronto* (Toronto: J. Ellis, 1858), plate 23; OAMC, E-4.
16. Currie, *Grand Trunk*, p 59.
17. *United Empire, Oct 20 1853*. CTA, RG1/A, Minute 320, April 2, 1855, 12th-16th pages. Cumberland, *Report to OS&HR 1853*, p 6. Several industrial sites, such as Good's Locomotive Works at Queen and Yonge streets, were already in place well back from the lake. These, and others near the mouth of the Don River, could have been reached by spur lines from the north without difficulty.

Digging Out and Filling In

18. refs regarding rys to waterfront. The uncertainty of location of the seat of government was a minor factor. In 1859, the GTR bought waterfront land and by 1865 had erected an elevator, clearly reversing its policy of bypassing Toronto; Thomas E. Blackwell, *Report ... of the Grand Trunk Railway Company of Canada for ... 1859* (London: Waterlow and Sons, 1860), p 15, plan 12.
19. Shanly, *Report on T&G 1852*, p 22.
20. The City gave the Northern L25000 on Nov 25 1850, on condition that it put up a passenger depot on the City's Market Block; CTA RG1/A, minute #17, Feb 9 1852. The Northern leased the Market Block site from Dec 10 1852 to July 1 1856, but did not use it; CTA, RG1/A, minute #79, Mar 19 1852. Its station site was between Bay and York streets. CTA RG1/A, minute #17, Feb 9 1852.
21. Shanly, *Report on T&G 1852*, p 22.
22. 'A Member of the Canadian Institute,' "Railway Termini and Pleasure Grounds", *Canadian Journal* 1 (May 1853), p 234. The author was probably Kivas Tully, author of the quotation; THCA, RG1/4, box 3, Aug 26 1853. Reproduction of drawing in THCA PD2/1, drawing #10267.
23. CTA, RG1/A, minute #320, Apr 9 1855, 5th page. CTA, RG17/A, box 1, Nov 5 1851. The Garrison Reserve (or Common) served a succession of institutional purposes, including the New Fort (Stanley Barracks), hospital, Trinity College, and Provincial Asylum. Proposed settlement of army pensioners there was not carried out; CTA, RG17/A, box 1, Mar 5 1852, Jun 7 1852, Feb 17 1853. Part had become the provincial exhibition grounds, with Crystal Palace, by 1858. There was no coherent plan.
24. Walter Shanly to Hugh Richardson, Jan 28 1852; THCA, RG1/4, box 4 vol 1.
25. Tully, Aug 26 1853.
26. *Daily Leader*, Dec 26 1855. Had the two rival companies come together to challenge the GTR?
27. Details described in CWH, Apr 22 1854; CTA RG1/A, minute #419.
28. CTA, RG1/A, minute #320, Apr 9 1855, 18th page.
29. The word esplanade is given various meanings in documents. Specialized terms include prism (the shape of the roadway cross-section), inside filling (of the lagoon between prism and old shore), retaining wall, wharfage-level, shore bluff, and terrace (above the bluff).
30. *Daily Leader*, Apr 9 1857. 20 Victoria, chapter 80 (1857).
31. Hugh Richardson to Commissioners of Toronto Harbour, Jan 1859; THCA RG1/4, box 4 vol 1. See also Tully, Aug 26 1853; TGCA, RG1/4, box 1 folders 106. CTA, RG1/B1, box 12, May 3 1858. This may, however, have been primarily for fire protection; THCA RG1/4, box 3.
32. A detailed narrative of the litigation through to 1865 may be followed in CTA, RG1/A (City Council Minutes), especially minute #320, Apr 9 1855 (Select Committee report on GTR contract), and minute #189, Jan 14 1861, pp 415-17 (Mayor Wilson's general report on the affairs of the City). See also in CTA, RG5/E, box 1 file 1 (Toronto Esplanade Arbitration); CPWG year-end report, Dec 31 1862 in CTA RG1/A; and THCA, box 6 vol 5 (Vaughan Roberts papers, being a collection of the useful newspaper clippings). The entire complicated story is explained at length, relying heavily on these documents and newspaper accounts, in Mellen, pp 42-72.
33. CWH, Dec 20 1863; CTA, RG1/A, p 214.
34. Victor L. Russell, *The Mayors of Toronto, Vol 1 1834-1879* (Erin, Ontario: Boston Mills Press, 1982), pp 71-75.
35. "Rail lands developers face morass," *Toronto Star*, May 5 1990, p C1.
36. "Plan to import Toronto soil sparks fears in Vespra;" *Toronto Star*, Jul 12 1989.
37. Conversation with Tim Orpwood, Trow Hydrology Consultants, Brampton, Sep 1989. He suggests perhaps two per cent of all waterfront core samples yield garbage.
38. NAC, RG11, vol 134, pp 17, 36, 61-63. Well before 1860, inspectors reprimanded the Northern for not replacing spindly temporary trestles with embankments rapidly enough.
39. Brooke and Schreiber; CTA, RG5/E, box 1 file 1, pp 35-36.
40. Queen's Wharf to Guelph segment open June; *Daily Leader*, Jun 13 1856. *Trackage in use from "eastern station" (at Don River) eastward August 25; Daily Leader*, Aug 26 1856. Full line in use to Montreal October; *Globe*, Oct 28 1856. A gap between the Don River and Queen's Wharf remained.
41. Thirty metres of timber took up three platform cars; Walker, *Four Whistles*, p 56. Nine timbers constituted a full load on a narrow-gauge railway car in the 1870s; Thomas F. McIlwraith, *The Toronto, Grey and Bruce Railway* (Toronto: Upper Canada Railway Society, 1963), p 19. Twelve timbers per railroad car is a good estimate for the Grand Trunk in the 1850s. For ballast, see photograph in Grand Trunk ballast pit, Paris, 1870s; OA, acc no S16147.
42. Fill from the east of the city was by contract with GTR; CTA, RG5/E, box 1 file 1, p 35.
43. CTA, Architectural Drawings PT169C.7 to PT 169C.13.
44. "This refuse, coal ashes, etc, is largely used for filling in lots in the cities." *Scientific American*, cited in *Hamilton Spectator*, Aug 6 1875.
45. Joseph Riddell, recalling the 1830s; CWH, Dec 31 1862; CTA, RG1/A.
46. Hugh Richardson, *Canadian Journal Supplement*, p 26; OA, Pamph 1853 #33. Wood may also have meant fuel.
47. *Globe*, Mar 24 1855. See also CTA, RG1/A, minute #320, Apr 9 1855, 31st, 34th, 43rd pages.
48. Harbour Master Reports, 1857, 1858, 1859; THCA, RG1/4, box 4 vol 1.
49. Sandford Fleming, "Report on the Preservation and Improvement of Toronto Harbour" *Canadian Journal*, special supplement (Toronto: McClellan, by authority of the Harbour Commissioners, 1854), pp 21, 25; OA, Pamph 1854 #33. Fleming's is one of three prize-winning essays in a competition, sponsored by the Commissioners for Toronto harbour, on this vexing problem. Henry Youle Hind's entry is a thorough account of the erosion of the Scarborough Bluffs, lake levels, sewage not being flushed, and the need for retaining walls. Kivas Tully, engineer, was the other winner. A worthy essay by Hugh Richardson, Harbour Master, is included here, but was ineligible for a prize.
50. Province of Canada, Board of Public Works, reports to the 13th Parliament: App 27, 1st sess, 1836-37, pp 104; App, 3rd sess, 1836-37, pp 347-53; App, 4th sess, 1839, vol 2, p 159; App, 5th sess, 1838-40, vol 1, pt 1, pp 391-400. Dredging at Whitby, 1848, and along the St Lawrence; PAC RG43 ser DII-1, vol 2539, p 363.
51. Shanly, in THCA RG1/4, box 4 vol 1.
52. Estimates from "Dredge", *Encyclopedia Britannica*, vol 8 (1910), pp 562-67. Kivas Tully to Toronto Harbour Commissioners, Jan 17 1870; THCA, RG1/4, box 5A.
53. James Cotton; THCA RG1/4, box 3 folder 2, 1854-55. See also CWH, Feb 6 1854; CTA, RG1/A. Perhaps he encountered a lot of stone, known to be on the bottom west of Yonge Street; G Nicolls, "Plan of the Harbour, Fort and Town of York," 1816; OAMC, D-9. Lighter material must have covered it by the 1850s.

Digging Out and Filling In

54. THCA, RG1/4, box 3 folder 5, 1869.
55. THCA, RG1/4, box 3 folder 5, 1869.
56. CTA, RG5/E, box 1 file 1, p 30; RG1/A, minute 320, Apr 9 1855, 12th, 25th pages.
57. CTA, RG5/E, box 1 file 1, pp 33, 34.
58. NAC, CO42, vol 392, p 140, 1826. See also "Plan of a breakwater pier for the front of the proposed embankment in the Harbour of Toronto;" CTA, Architectural Drawings, PT169C.7. [date?]
59. CTA, RG5/E, box 1 file 1, p 32, 1849. Illustration: Toronto harbour looking northeastward from Queen's Wharf, 1843; OA, acc #1696-S1156.
60. Richardson to Commissioners; THCA, RG1/4, box 4 folder 8, Jan 12, 1854.
61. A. Brunel to Mayor of Toronto, Oct 23 1854; OA, MS385.
62. "Toronto" and "Fish Market, Toronto", both about 1838, in W. H. Bartlett and N. P. Willis, *Canadian Scenery, Illustrated*, vol 1 (London: James S. Virtue, 1840), opp pp 87, 88. A variant of the fish market scene, by the Toronto Engraving Company, appears in Careless, p 47.
63. CPWG, Feb 17 1853; CTA, RG 17/A. CWH, Dec 31 1862, recollecting action in 1854; CTA, RG1/A.
64. Most accounts and artwork place the height of the bank at 5 or 6 metres. Elizabeth Simcoe, "The Garrison, York", 1796; MTLB. Irvine, "Peter to John Street," 1810; MTLB. Bartlett, "Toronto," 1838. Cumberland Plan, *Globe*, Aug 2 1853. "Winter Recreation on Toronto Harbour," 1853; ROM, 952.169.5. CTA, RG5/E, box 1 file 1, p 34. William Armstrong, "Boat Works at the Foot of Bathurst Street, Toronto," 1865, is exceptional, the bank depicted as much as 9 metres; ROM, 67.1.118. W. H. Pearson, *Recollections and Records of Toronto of Old* (Toronto: Briggs, 1914), p 113. One metre of height corresponds to between 150,000 and 200,000 cubic metres of fill.
65. CTA, RG1/A, Nov 17 1853.
66. CTA, RG5/E, p 36. CWH, Dec 31 1862; CTA, RG1/A.
67. CTA, RG1/A, minute #320, Apr 9 1855, 25th page.
68. CTA, RG1/A, minute #419, Apr 23 1854. See also CWH, Jun 18 1855, Aug 6 1855; CTA RG1/A.
69. 'Member', "Railway Termini," p 234.
70. Major B MacDougall to Mayor of Toronto, Sep 25 1853; OA, MS385.
71. *Globe*, Jun 9 1853. OA Pamph, Rail and Nav, Box 22(d), p 14.
72. Recalled from 1860. Cited in Walker, *Four Whistles*, p 54.
73. *Globe*, Oct 4 1853. Brunel to Mayor, Oct 23 1854; OA, MS385. Tully once threatened that, if the Esplanade were not approved, the NR might have to follow the top of the Terrace; *Patriot*, Feb 10 1853.
74. Shanly, *Report on T&G 1852*, p 24.
75. OA, MG385, May 12 1855. Tully to Gzowski, May 19 1855; CTA, RG1/B1, box 12.
76. CTA RG1/A, minute #320, Apr 9 1855, 16th page. In 1859, the GTR bought waterfront land, and by 1865 had erected an elevator, clearly reversing its policy of bypassing Toronto; Thomas E. Blackwell, *Report ... of the Grand Trunk Railway Company of Canada for ... 1859* (London: Waterlow and sons, 1860), p 15, plan 12.
77. *Daily Leader*, Sept 30 1856.
78. THCA, RG2/1 vol 7, passim.
79. CTA, RG1/A, minute 923, Jan 12 1856.
80. CPWG, Feb 17 1853; CTA, RG17/A. *Globe*, Jun 9 1853.
81. CTA, RG1/A, minute #320, Apr 9 1855, 43rd page.
82. Walker, *Four Whistles*, p 54.
83. THCA, RG2/1 vol 7, passim.
84. THCA, RG2/4, box 1 vol 1.
85. Personal communication, Tim Orpwood, Sep 1989.