Abstract

The advent of high-speed rail technology and the termination of charter flights at the Municipal Airport in Edmonton, Alberta, have renewed interest in re-establishing passenger rail service between the province's two largest cities, Edmonton and Calgary.

However, for passenger rail to re-emerge as a viable means of regional transportation, it must have a strong presence and significance within the contemporary urban environment. The station, as the rail line's direct connection to the urban environment, becomes an important means of signaling the re-emergence of passenger rail.

The design and discussion presented here are based on re-establishing the appearance and importance of the urban rail station in western Canadian society. The design and discussion of the station are examined in relation to the history between rail stations and the city, the rail station within a fragmented urban environment, and how the station can help the traveler reconnect with time and place.

Although high-speed rail in Alberta does not currently exist, the design and discussion are a response to a fully operational service. The design proposes four high-speed rail lines servicing transcontinental and regional trains, a new northern subway branch line, bus station and underground parkade, massing for a hotel, and an urban park.

Acknowledgements

To God, for showing me a glimpse of pure hell.

To my parents, Gerry and Ancet, for their unlimited supply of love, support and money.

To my brother Glenn, and my sister Alison, for setting such a high standard to aim for.

To my Grandmother Laura, for being herself.

To my girlfriend Jillie Tavares, for loving me despite my many flaws.

To my best friend Chris Labute, for being a true mate through thick and thin.

To my architectural allies Tony Leong, Jeff Howlett, Dave Goulden, Brendan Tomlins, Ted Bruneau, Theresa Johanessma, and James Rainer Andailis, for their critiques and friendship.

To my architectural adversaries, for pushing me to do things better and cooler.

To Bill Porochnuk, Marino Vardabasso, Bob Fisher and Myrna Riches, for doing amazing work without being bureaucrats.

To my thesis advisor Robert Kirby, for his excitement and genuine interest in my thesis.

To my original external advisor Geoffrey Simmins, for his insight and patience.

To my external advisor, Ron Kostyniuk for agreeing to take on my project under difficult circumstances and putting up with me misspelling his name.

To Ken Johnson, for being an insightful and not too ill tempered devil's advocate.

To my future employer(s), for hiring me.

To anyone else that I may have left out, thanks.

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Introduction

Project Background

Passenger rail between Alberta's two major centres has remained dormant since 1977, when the Calgary and Edmonton Railway line ceased operations. At the time, rail service could no longer compete with automobile and aircraft on the basis of time or with bus service in terms of cost. With the advent of high-speed rail technology and the termination of chartered flights from the Municipal Airport in Edmonton, however, new opportunities exist to re-establish passenger rail as a viable means of regional transportation.

High-speed rail, developed extensively in Europe and more recently in the United States, has emerged as a strong alternative to automobile and aircraft transportation. Both planes and cars have been criticized for producing high levels of pollution from jet streams and vehicle emissions, respectively. Traffic congestion on major roadways, such as Highway Two between Edmonton and Calgary, is another major problem with automobile use.

Chartered flights out of the Edmonton Municipal Airport (also known as City Centre Airport) have ceased in favour of the larger Edmonton International Airport located outside of the city limits. This decreases the advantage of taking the plane between the two cities, since a periphery location generally results in longer travels times and an increased number of transport interchanges.

Located near downtown, the Municipal Airport was advantageous because the amount of time spent in travel was kept to a minimum. Traveling via the International Airport requires an extra thirty-minute drive into the central core of the city, often the final destination point. High-speed rail, capable of speeds of 300 km/hr would be able to compete with car travel efficiency by providing downtown to downtown connections.

Although a high-speed rail line between Edmonton and Calgary is still many years into the future, planning for its possible development requires consideration now. Such a line would demand significant capital investment and take a number of years to complete. Present infrastructure is inadequate to service the new technology, as the line would require new tracks to accommodate the high-speed trains, and new rail stations to handle the increased amount of users. However, even a fully operational high-speed rail line would require more than improved service to reestablish itself as a viable means of transport. The rail line design would need to make a significant urban impact to reach its full potential. The architecture of the rail station can significantly aid the new rail line in this regard, providing a strong presence and significant impact within the city.

Thesis Objectives

The architecture of the rail station can significantly aid in the reappearance of passenger rail in western Canadian society. The intent of the thesis is to explore means of re-establishing the contemporary urban rail station within western Canadian society. The station, as the rail line's direct connection to the urban environment, becomes an important means of signaling the reemergence of passenger rail. The design and discussion examine the presence and significance of the station in relation to the history between rail stations and the city, the rail station within a fragmented urban environment, and to methods of reconnecting the traveler to time and place.

Chapter one is a historical overview of rail stations, specifically within western Canada and Edmonton. The chapter explores the relationship between the rail station and the city, and the reasons for the swift rise and subsequently slow decline of the rail station within western Canadian society.

Chapter two examines the fragmented urban environment that confronts the design of the new rail station. The chapter looks at elements that have contributed to this fragmented condition and their implications on the design of the station.

Chapter three examines the impact of high-speed rail travel on the individual traveler. The intent is to explore means of helping the traveler reconnect to time and place through an understanding and response to concrete and abstract dimensions of movement.

The final section of the document is based on a translation of the ideas and discussion from the first three chapters into a hypothetical design for the train station. Although high-speed rail in Alberta does not currently exist, the design and discussion are a response to a fully operational service. The design proposes four high-speed rail lines servicing transcontinental and regional trains, a new northern subway branch line, bus station, massing for a hotel and underground parkade, and an urban park.

Chapter I: History between the Rail Station and the City

Historical Overview of Railway Stations in Western Canada

To understand why the current Edmonton station became moribund and to propose ways to revitalize passenger rail and station use, it is important to review the history of rail stations in western Canada, and more specifically the Edmonton stations. The intent is to examine events and reasons that contributed to the success or failure of a station's presence and significance within the urban fabric of the community.

Despite modest origins, the first stations in western Canada served as catalysts for urban development. Appearing in the 1880s, these stations dotted the Prairies and the Pacific Coast along the still unfinished transcontinental rail line. They were composed of two boxcars without wheels [1] (figure 1). One car serviced the office and shelter requirements of the agent, while the other was for freight and a baggage. Although modest, these stations were often the only presence of settlement in an otherwise untouched landscape.

Wilfred Laurier issued an extensive immigration campaign during his tenure as Prime Minister of Canada between 1896 and 1911. The intent was to develop the northern prairies "into a national engine of prosperity with wheat and railways." [2] The Minister of the Interior, Clifford Sifton, oversaw the most successful immigration campaign in Canadian history. The immigrants brought with them the need for buildings to house commerce and enterprise, and town planning to provide ordered development and to account for future expansion.

During the period before World War I, the planning of communities was usually dictated by the Canadian Pacific Railway (CPR), the primary railway company in Canada. In the words of Brian D. Johnson, the Prairies were essentially a "... virgin territory that the CPR played God: it fostered some eight hundred villages, towns and cities and determined, often arbitrarily, the shape of the new society." [3] The one main constant of the CPR, though, was that the rail station was positioned as the fulcrum and centerpiece of the community.

Sandford Fleming, chief civil engineer of the CPR at the time, was responsible for town planning in the Prairies. His proposed standard town plan called for a double lozenge grid that directed town traffic on a diagonal axis towards the station (figure 2). Although this plan never materialized, the idea of making the rail station the focus was preserved. This likely would have resulted anyway, considering that the station " was the place where nearly all goods and news were received and dispatched, and until about 1940 was without question a

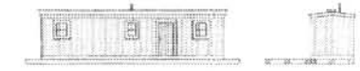


Figure 1: Track and end elevations of portable 1880s Prairie CPR station.

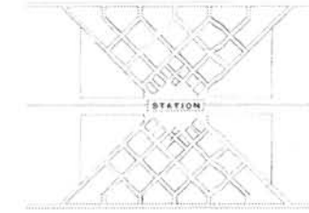


Figure 2: Sandford Fleming's 1877 proposed plan for CPR established communities within the Prairies.

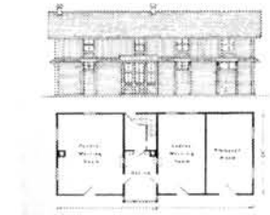


Figure 3: Track and main floor plan of 1883 CPR Medicine Hat station.

[1] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p. 14.
[2] Terry Pindell, The Last Train to Toronto: A Canadian Rail Odyssey (Vancouver: Douglas and McIntyre, 1992), p. 95.
[3] Brian D. Johnson, Railway Country: Across Canada by Train (Toronto: Key Porter Books, 1985) p.129
[4] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.3.

community's major link with the outside world."[4]

Despite occupying a prominent position, usually at the end of Main Street, the stations that the CPR built in the 1880s were still modest, standardized, wooden constructions of small scale and limited architectural expression (figure 3). The only defining feature was seen in the Swiss Chalet gable ends, often seen in nineteenth-century domestic housing. Pattern bands between stories sometimes enhanced this feature, diagonal sheathing in the panels beneath the windows, and spindle finials on the roof peaks. Although conditions for the agent improved, passenger comfort was kept to a minimum. Waiting areas were cramped and no shelter was provided over the platforms.

Such sparse provisions could only be expected considering the small populations and high costs incurred from the development of the rail line, such as those for equipment, track laying, and station construction. The main reason, however, was the lack of significant competition to CPR. This condition changed between the late 1890s and early 1920s when the Canadian Northern Railway (CNR) and Grand Trunk Pacific Railway (GTPR), began making inroads into the CPR monopoly.

Stiff competition among the three rail lines actually resulted in over-building, as each company tried to gain attention and favour with the public. During this frantic period of station construction, it was almost guaranteed that "every prairie city had two sometimes three stations, some of them very short-lived indeed."[5] Also at this time, the scale and character of station design was changing across the North American continent. The western Canadian stations were following the trends set by railway architecture in larger urban centres in the east. In his book, *The Railway Stations of Western Canada: an Architectural History*, J. Edward Martin describes the general climate of the late nineteenth century in North America as a lavish period of time where,

> ... extravagant railway terminals were commonplace. It was not surprising that the trappings of opulence arrived in the sparsely-settled Canadian West by the mid-1890s, and began to impose an air of stability, if not splendor on a land so recently wilderness.[6]

Stylistic expressions of urban stations were often borrowed from the east, modified to a smaller scale. There were two predominant styles in vogue in Canada at the time: a hybrid of French Second Empire Chateaux-Scottish Baronial; and Neo-Roman Classical.

The use of classical revival architecture gained favour by many architects after the 1893 Chicago Colombian Exposition. Its popularity as a design style was also due to Beaux-Arts training, which was prevalent in Paris and in some North American

Figure 4: Exterior of 1911 Winnipeg Station by Warren and Wetmore.

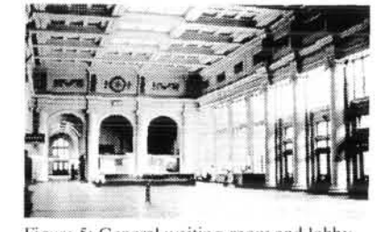


Figure 5: General waiting room and lobby of 1914 Vancouver CPR III station by Barrott, Blackader and Webster.

Figure 6: Exterior of 1898 Vancouver CPR Terminal by Edward Maxwell.

[5]Jeffrey Richards and John M. MacKenzie, The Railway Station: A Social History (New York: Oxford University Press, 1986), p.54.
[6]J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.14.

architecture schools. The Winnipeg Union Station of 1911 by the firm Warren and Wetmore, and the Vancouver CPR III of 1912 by the firm Barrott, Blacklader and Webster (figures 4 and 5) are two of the finest examples of classical railway architecture in western Canada. Unlike smaller stations that had the tracks pass by them, these stations asserted themselves as terminal points, acting as caps to the motion of the train. Classicism, according to Martin, is an excellent style for station design. The great arches and colonnades suggested strength of the railway and security of the station, and provided wide entry openings and unobstructed interior space. [7]

Jeffrey Richards and John M. MacKenzie, however, do not concur with Martin. They argue that the hybrid style reflects the diverse cultural background of Canadians. From the 1870s to the 1880s, it was generally considered the predominant national style, as it was often used in rail station and rail hotel design. While the style did appear occasionally over the next forty-five years, it gave way to the classical style in the early twentieth century. In their book *The Railway Station: A Social History* ; Richards and MacKenzie write,

> [i]n the twentieth century, regrettably, Canada abandoned its distinctive combination of French and Scottish elements which so perfectly reflected its cultural heritage ... [a] bastard classical took over and became the dominant form for several decades. [8]

The hybrid style featured complex rooflines and towers with conical caps. A fine example in the West was the 1898 CPR Vancouver Terminal (figure 6) by Edward Maxwell. The influential source for the style likely came from the Union Station in St. Louis (1891-94) by Theodore C. Link and Edward B. Cameron, regarded as one of the finest stations ever built in North America (figure 7). Unfortunately, the desire for power through extravagant station design and an excess number of stations had negative economic consequences for some rail lines.

The over-building and intense competition did not benefit any of the rail companies. The GTPR and CNR found that they could not compete individually with the CPR. The two created union stations and terminated non-essential stations to avoid redundancy. In 1920, they amalgamated into Canadian National Railways (CN).

After World War I station construction was slowed considerably; as Martin observes, "[o]nly a tenth of the stations in western Canada are of the post-1919 date, for the great railway boom that had marked the beginning of the century was moribund before the war's end." [9] Many station designs saw greater economies in construction. Columns and polished marble were eliminated in larger stations, and smaller stations were once again made of simple, unornamented woodwork.

Figure 7: Exterior of 1894 St. Louis Union Station by Theodore C. Link and Edward D. Cameron.

Figure 8: Rendering of exterior of 1920 CPR Moose Jaw by Hugh G. Jones.

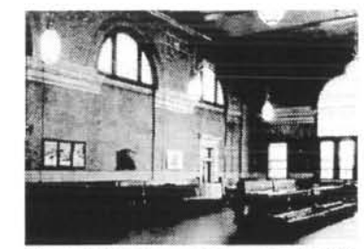


Figure 9: General waiting room of 1920 CPR Moose Jaw Station.

[7] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.26
[8] Jeffrey Richards and John M. MacKenzie, The Railway Station: A Social History (New York: Oxford University Press, 1986), p.57.
[9] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.78.

Although no longer extravagant, these station designs sought out new means of expression through economic materials and construction methods. An example could be seen in the 1920 CPR Moose Jaw Station by Hugh G. Jones (figures 8 and 9). The interior space was bold, without any attempt to disguise the brick construction, as was the norm in previous stations. Although not as striking as the previous hybrid style of the 1898 station, this new station was clean of line and structurally sound.

Although passenger use became particularly heavy during World War II, rail companies made do with existing stations. The government favoured spending on road and air travel, further aggravating the high costs of maintaining passenger trains and terminals. During the late 1940s to the late 1950s, CN opted for cosmetic changes to existing stations rather than designing new stations. Modernization of stations was generally limited to new paint schemes and adding asbestos siding. Many stations and train lines eventually had to be eliminated due to high taxes and labour costs.

At the same time, the ideology of modernism was beginning to emerge in the architectural expression of station design. As Martin indicates, "[t]he appearance of stations changed radically ... in part, the rising costs governed the change, but also important was the wave of impatience with tradition that grew as technology advanced."[10]

The International Style, which rejected historical reference and promoted economical building, seemed logical as the preferred style of station design. Although the style appeared in minor station design in the 1940s and early 1950s, it was not evident in a large urban centre until 1964, with the CNR Saskatoon Station (figure 10) and the Ottawa Station in 1967 (figure 11).

Even though rail remained a viable means of freight transport, it steadily lost ground to aircraft, automobiles and bus travel. As the significance of the station in society began to wane, the appearance also declined. The CPR passenger rail station in Calgary (1969) was an example of the demise of passenger rail in the West, and the rest of Canada. The complex covers two city blocks and features ample space for office, retail and transportation facilities (figure 12). The station itself, however, was submerged below the Calgary Tower, occupying only a small, curved space around the base.

There are several reasons for decline of rail travel, which obviously affects the decline of stations. The federal government developed a task force to investigate the future of passenger rail in Canada. The 1961 Gréber Commission concluded stations and railway yards were unsightly, derelict places.[11] This resulted in the removal of stations from urban centres to the edge of cities (Saskatoon), the closure of many stations (Calgary, Vancouver), and the sale of railway land (Edmonton to Grant MacEwan community college). The age of the rail station as the

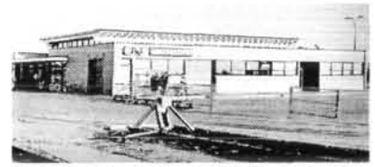


Figure 10: Exterior of 1964 Saskatoon CNR station.

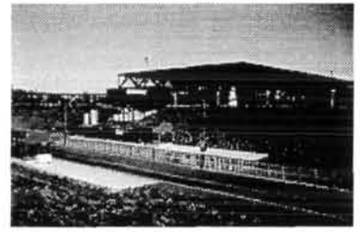


Figure 11: 1967 Ottawa train station.

Figure 12: Arial view of 1969 Calgary station buried under CPR's Palliser Square.

[10] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.94.
[11] Jeffrey Richards and John M. MacKenzie, The Railway Station: A Social History (New York: Oxford University Press, 1986), p. 58.

centre of western Canadian society was a faint memory at this point.

The CN and CP Railways were finding that the use of passenger rail was declining and that the operation costs were extremely high. This was primarily due to the expense of maintaining an aging rail fleet, and significant inroads made by the automobile, airplane and bus transportation. Both companies found it unprofitable to operate passenger rail services over medium-range and long-range distances. In 1978, they both surrendered passenger rail services to the federal crown corporation VIA Rail, which has provided passenger rail in Canada ever since. Unfortunately, VIA Rail has experienced several years of financial difficulties, with only a small number of users and high costs associated with leasing tracks from CN and CP and with maintaining their own fleet of trains.

Presence and Significance of Rail and Rail Stations in Edmonton

Edmonton was unique in that it survived and prospered to a modest degree without being serviced by rail. Its northern geographical location and political problems with the CPR prevented the development of a rail line to the community until late in the nineteenth century.

The original rail route proposed by Fleming in 1875 was to pass through Edmonton on its way to Yellowhead Pass [12] (figure 13). It was to follow the northern fur trade route and situate Edmonton as a gateway to the Canadian north. The threat of competition from American rail companies, however, compelled the CPR to ignore the rail survey of Fleming. A shorter southern route through rival Calgary was considered more economical and provided a deterrent to the American companies bringing spur lines into Canada. [13]

Although the community grew at first without the aid of rail, the arrival in 1891 of the Calgary and Edmonton Railway line to the south bank of the North Saskatchewan River was a welcomed event. The rail line helped end the isolation of Edmonton from the rest of the country. [14] Substantial increases in growth, and a renewed optimism in the community resulted. It did not, however, end the politics between the community and the CPR.

The CPR did not service Northern Edmonton for quite some time due to the expense of constructing a bridge to cross the broad, deep river valley of the North Saskatchewan River. Instead, the CPR opted to create a new community in the southern townsite of Strathcona. The CPR station built in 1907 (figure 14), at the corner of Whyte Avenue and what is now 103rd Street, helped stimulate the development of the town's commercial centre. Its architectural expression followed a series of stations in Medicine Hat, Lethbridge, and Saskatoon built by the CPR during

Figure 13: Rail lines through the Prairies. Bold line represents transcontinental rail route proposed by Sandford Fleming.

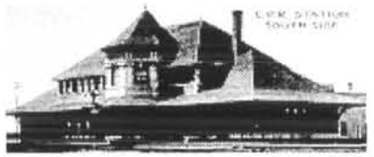


Figure 14: Exterior of 1907 Edmonton CPR southside station in the community of Strathcona.

Figure 15: Exterior of 1905 Edmonton CNR station by R. B. Pratt located at 104 Avenue and 101 Street.

[12] Dennis Person and Carin Routledge, Edmonton: Portrait of a City (Edmonton: McClelland and Stewart Ltd., 1981), p.12.
[13] Brian D. Johnson, Railway Country: Across Canada by Train (Toronto: Key Porter Books, 1985) p.129.
[14] Dennis Person and Carin Routledge, Edmonton: Portrait of a City (Edmonton: McClelland and Stewart Ltd., 1981), p.12.

the same period.[15] All had similar features, such as red brick exteriors and short, polygonal towers atop a sturdy, grey stone base. They also recalled the chateaux-baronial expression of other larger stations across the country.

While the station and Strathcona did prosper, the northern community grew quicker. The development of GTPR and CNR in the northern prairies, and the designation of Edmonton as Alberta's capital in 1905 significantly aided this growth.[16] The development of the rival rail lines to the CPR was part of Clifford Sifton's massive immigration push to find settlers and farmers to increase wheat production. Sifton's successor as minister of the interior, Frank Oliver of Edmonton, helped designate Alberta as a province and Edmonton as its capital. Strathcona would eventually amalgamate with its northern neighbor in 1912 to become a part of Greater Edmonton.

The CNR constructed a station in 1905 (figure 15), along 104 Avenue and 101 Street, which helped to service the northern community. The design of the CNR station by R. B. Pratt borrowed much of its expression from smaller standard stations that also contained elements from the chateaux-baronial style.[17] The CNR consistently employed a dominant pyramid roof in the centre section, broken by gable dormers, and decorated by castle-like turrets. Under a shingled awning was a rounded bay, with an exterior construction of red brick, one of the predominant materials of the region.

The success of the CNR, coupled with the designation of Edmonton as capital, forced the CPR to expand north. In 1912, the CPR built the High Level Bridge over the western section of the North Saskatchewan River (figure 16). This was followed by the construction of a station in the same year, located on 109 Street and Jasper Avenue (figure 17). The station helped form the anchor to the primary business district situated along Jasper Avenue, and was thus in a better location than the CNR station further north. The medium sized station was an elegant classical-revival composition. Modernization attempts in the mid-forties, such as replacing small windows with larger ones, removed much of this elegance.[18]

In 1928, CN decided that the old 1905 CNR station was not suitable to accommodate increased demand. The old CNR station remained as the offices of CN until it was demolished in 1952. The new station by CN architect John Schofield was built immediately east of the CNR depot (figure 18). It echoed the post-war building trend towards more conservative features. In this manner, it also foreshadowed the prevailing mood of the 1930s depression. The exterior of the CN station displayed a white classical-revival edifice, contrasted with dark red brick. The layout was designed as a hollow rectangle, skylit from above and made of a concrete shell. It was oriented on an axis at a right angle to the tracks to allow for a smooth flow of traffic through the concourse.[19]

Figure 16: Arial view of 1912 High Level Bridge.

Figure 17: Rendering of exterior of 1919 CPR Station located along 109 Street and Jasper Avenue.

Figure 18: Exterior of 1928 CN station east of 1905 CNR station, by the architect John Schofield.

[15] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.38.
[16] Dennis Person and Carin Routledge, Edmonton: Portrait of a City (Edmonton: McClelland and Stewart Ltd., 1981), p.26.
[17] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.38.
[18] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.44.

Although the new depot satisfied the initial demand of passengers, it required a third story in 1945 to keep up with even greater demand for rail service. The station preserved a technique of previous large stations across the country. One side of the concourse screened by a wall with windows was for the dining and restaurant section. On the other side were the news stand and ticket facilities.

In 1966, the Northern Alberta Railway (partially owned by the CPR) completed a station virtually unnoticed in the northern outskirts of the city (figure 19). The prefabricated metal structure that was at best mundane in appearance. [20] The design stressed function over all other considerations, which was typical of the social and economical attitudes of the time. The station focused strictly on freight service in the 1970s, when passenger service was terminated.

Deficiencies of the Present Edmonton Rail Station

In 1964, the old CN depot serviced its last train; the station was demolished two years later to make way for the current terminal. The intent of the design was to act as an integral part of the twenty-six storey CN tower (figure 20). The station was one of the last major passenger facilities in the West.

The tower block is visible from several blocks away. In this manner, the complex resembles the office towers clustered in and around Jasper Avenue. Charles Bohi in his book, *Canadian National's Western Depots: The Country Stations in Western Canada* writes, "... the current station facilities utilize the basement and ground floor section of the structure, and - except for the signs -cannot be easily recognized as a railway terminal from the street." [21]

While the complex provides good location and space for the offices of CN, the station has no real significance as a transport hub. The taxi and car drop-off area are not visible (figure 21), and there are few taxis waiting. The downtown location is not very beneficial for the taxi service, as fares are minimal compared to the amount earned transporting airport travelers into the city. The only significant connecting transport is the bus service with a bus loop east of the entry canopy (figure 22).

The bus loop helps satisfy some of the short-range transportation needs of the CN tower and also city hall, which is within walking distance. However, the bus loop is too far away from Grant MacEwan community college to service a potentially large number of users. In addition, the station provides no access to the underground rail service. No connection has been established for the subway system to the northwest or north-central areas of the city.

A large white stucco canopy band depicting the "CN" logo in red neon letters marks the entry to the station and the rest of the complex from 104 Avenue (figure 23). While this helps indicate that it is

Figure 19: Exterior of 1966 Northern Alberta Railways station.

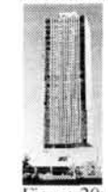


Figure 20: Current building marked predominantly by CN Tower.

Figure 21: Taxi and car drop-off below main entrance.

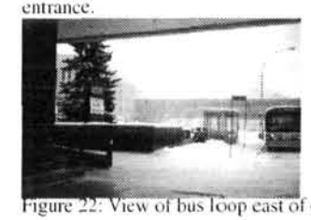


Figure 22: View of bus loop east of entry canopy.

[19] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.80.
[20] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.105.
[21] Charles Bohi, Canadian National's Western Depots: The Country Stations in Western Canada (Don Mills, Ont. : Railfare Enterprises Ltd., 1977), p.77.

an office complex for rail, the problem with this is that CN no longer operates passenger rail. The "VIA" logo is hardly noticeable.

Once in the surprisingly cramped lobby space (figure 24), signs are again required to indicate how to get to the rail station. A disjunction between time and place occurs within the station and on the platform areas. The interior mainly uses artificial lighting for illumination. This is the direct result of being placed in the basement of the building. The driveway provides some daylight for taxis to the south, but the mechanical service block cuts off most of this light.

The plan is open and informal, similar to air terminals. [22] Baggage handling also follows a similar style to airports, as conveyors and carousels transport luggage. While the open plan has potential, the columns are required to support the offices above. This results in some awkward spaces. The cylindrical ticket booth and office appear clumsy within this colonnade configuration (figure 25).

The interior layout at times produces dead spaces with poor visibility and lighting. The space behind the stairs is a good example (figure 26). At night, it is difficult to see what is behind the stair and mechanical block. This could be potentially dangerous, as one is not aware of who might be lurking in the men's bathroom area or around the driveway. The cafeteria is also in an odd location, behind the stair (figure 27). As a revenue-generating service, the cafeteria should be in a more readily apparent part of the building.

The circulation arrangement forces passengers to divide into two lines to pass the centrally placed elevators and ticket office. Technically, the space between the ticket booth and mechanical block is designated the waiting area. However, there really is no distinct space for waiting, as benches are spread throughout the concourse.

The tunnel is fairly narrow, and access to the trains is off to the sides (figure 28). While this is not a problem for the low-frequency levels of current train use, it would be quite uncomfortable for heavy use. An escalator occupies one access, while a stair occupies the other. Handicap access is provided through the baggage area.

In many ways, the platform area recalls the setting of the initial western stations (figure 29). One probably would wait till the last moment before going up to the platform space and entering the train. Outside, no shelter is provided on the platforms, save the escalator and stair enclosures. In-between the two enclosures are shelving and slots for repairs and spare parts, which are not protected with shutters from theft or vandalism. The appearance of this area resembles a junkyard more than a rail station.
The platforms are situated in the back of the station overlooking the lovely parking lot for CN employees, and the derelict areas north of the station (figure 30). Street lamps illuminate the tracks to some


Figure 23: Canopy over main entry.


Figure 24: Within lobby space of current VIA Rail Edmonton station.


Figure 25: Cylindrical office and ticket booth within collonade.

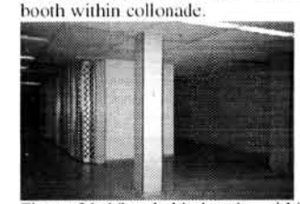


Figure 26: View behind stairs within current Edmonton station.

[22] J. Edward Martin, The Railway Stations of Western Canada (White Rock, B.C., Canada: Studio E Martin, 1980), p.102.

degree, but one should be careful not to venture too far from the circulation enclosures. Drunks frequently camp out near the station tracks to the west, and squatters live beside the bridge. Garbage to needles litter the metal barbed-wire fence.

With the main area located underneath and the platforms behind the CN offices, the terminal has virtually no presence within downtown Edmonton. Its minimal provisions indicate a lack of pride in the service provided. While the station has potential as a transport hub, its significance is diminished by the fact that it does not connect the underground system and its location is too far from the college.

Figure 27: Cafeteria located behind the stairs.

Figure 28: Tunnels leading to the tracks.

Figure 29: Platforms level, with the concrete boxes for escalator and stair access.

Figure 30: View from platforms looking north.

Chapter II: The Rail Station within a Fragmented Urban Environment

The design of the new rail station must account for a contemporary urban environment fragmented on many levels. Urban sprawl, over-reliance on the automobile, and the discontinuity between past and present building structures, have contributed to urban fragmentation. For the station to make a successful intervention, it is important to be aware of and understand these contributing factors to urban fragmentation, and their implications on station design.

Urban Sprawl and the Decay of the Downtown

The problem of urban sprawl contributes to fragmented urban societies. Cities spread out over large areas to keep density levels within communities low. For Prairie cities, such as Edmonton, it is easy to see why urban sprawl continually occurs. The land is generally without significant topographical characteristics, such as large bodies of water or mountains, which impede development. As such, there is not a pressing need to build up densities within established communities. There is also a prevailing attitude within our society to escape densely populated areas to more open, isolated communities. In his 1997 book *The City After the Automobile: An Architect's Vision*, Moshe Safdie states,

> [t]he extensive suburban migration that has created our dispersed cities is not only a response to the growth and congestion in the city center, but also a profound cultural and psychological desire - omnipresent in North America - for freedom, expansiveness, privacy and flexibility. [23]

What has resulted from this attitude of escaping critical mass and living on unlimited land is that Prairies cities have become a prime illustration of urban sprawl. They occupy large areas of land despite having relatively small populations. Unfortunately, extensive urban sprawl results in fewer interactions between and within communities of the city. While this interaction may not be essential for the city to survive, the city does not function as a cohesive whole.

The downtown sector, historically considered the activity core of the city, has been most affected by this lack of interaction. While many people still work daily in the downtown, most choose to live in suburban areas well outside the civic core. As people have fled from the downtown area, they have taken with them the activities, such as retail and restaurants, which made the downtown so vibrant. Unfortunately, the new suburban areas lack the critical mass of a single centralized location. As a result, these areas do not have the same energy once enjoyed

[23] Moshe Safdie. The City After the Automobile: An Architect's Vision (Toronto: Stoddart Publishing Co. Ltd., 1997). p.123.

by the downtown. As Kevin Lynch has argued,

> [t]he outward dispersion of high intensity activities to widely scattered sites deprives us of social and visual meeting points, as well as the opportunity to live close to the action or to enjoy a rich array of supporting facilities. [24]

The slow decay of the civic core has brought with it the problem of desolate areas within this area of the city (figure 31). Large sectors are abandoned and subsequently fall into disrepair, because there is not a significant level of interaction occurring within them. This is especially true around production districts that no longer serve a useful function within the city, such as old warehouses and rail yards. These areas are not maintained and become eye-sores, taking away from the quality and appearance of the city. Instead of being the showcase of the city, the downtown becomes a place to avoid. The abandonment of these areas will continue as new centres outside the downtown are developed.

The implications of urban sprawl on the design of the rail station primarily impact the siting of the station. Recent stations built in Canada, such as those in Ottawa and Saskatoon, have been located on the periphery of the city. The reason is the result of the 1961 Gréber Commission, mentioned earlier in the Historical Framework section. The commission criticized the appearance of stations, and suggested that they be located at the edge of the city, like an airport. This defeats the advantage of taking the rail, which can provide downtown to downtown connection, unlike a plane. What is more, locating on the periphery does not provide equal access from most sectors of the city.

Locating the station downtown is the most powerful decision because it provides a centralized point of arrival and departure. A downtown rail station also provides the opportunity to redevelop abandoned areas within this community. The station should stimulate urban development, as it would bring a large number of people into a concentrated area. The siting, however, must also be relatively close or provide some connection to established areas, such as city hall or the business district. This is not only for the station's own survival, but also for these established areas to benefit from an increased volume of potential users.

There are, however, problems with locating in the downtown. For one, the final destination of the traveler is not always downtown, even for business trips. As Safdie observes, there is often a

> ... misperception that business travel consists of trips between center cities, that 'the city' today is constituted by the downtown core alone ... even

Figure 31: View of the run-down MacDonald building near the north-east corner of the site.

[24] Kevin Lynch, City Sense and City Design (Cambridge, Mass.: MIT Press, 1990), p.774.

> when one can travel into the center of downtown by train, in many cases a car is then required to reach the ultimate destination, out in the region.[25]

The station must provide more than regional transportation in and out of Edmonton. The station must act as an interchange of various modes of transport operating at different scales of speed. These various modes of transit, such as the subway and bus system, would be the means of connecting the station to outlying areas. This would help "create a structure for urban development, with the points of transfer between all these systems offering natural sites for rich interaction centers."[26]

Currently, Edmonton's subway system is underdeveloped, offering only one line that runs from the University of Alberta in the southwest, through the downtown, to the Clareview Campus in the north-east (figure 32). Proposals for linking the north-west and north-central sectors to the downtown have a spur line off of Churchill Station running up 105th street (figure 33). This would help to connect the station to the rest of the downtown, and to the northern portion of the city's population.

Dominance of the Automobile and the Loss of the Pedestrian Precinct

According to Dr. James Lowenthal, "North Americans drive the equivalent of a trip to the planet Pluto and back every day."[27] It is easy to see why the car is a favoured means of transport. It embodies the same ideals of freedom and privacy sought by suburban dwellers. The car allows the occupant to avoid the potential inconvenience and crowded conditions of public transport. Indeed, the car is more personal, and often becomes a psychological and economic extension of its owner. While the automobile has in many ways improved transportation for people, there are also numerous problems associated with its use.

Most cars use non-renewable resources as fuel. While these sources may be available now, the continual use of these fuels contributes to their depletion. Another ecological problem associated with car use is the high level of pollution that many cars emit as a result of burning fuel. These are serious problems that need to be addressed through improvements to automobiles and through alternate modes of transport. In addition, the over-reliance by North Americans on the use of cars has contributed to the problem of fragmented urban societies.

Figure 32: Current Edmonton subway line running from the University of Alberta on the south-side of the North Saskatchewan River to the Clareview campus in the north-east.

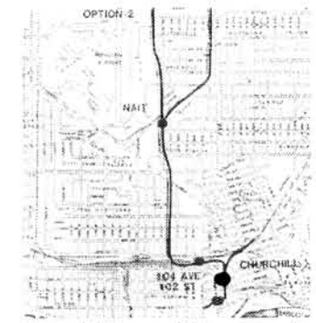


Figure 33: Proposed Edmonton subway expansion north cutting underground the site from the Churchill Station up 105 Street.

[25]Moshe Safdie, The City After the Automobile: An Architect's Vision (Toronto: Stoddart Publishing Co, Ltd., 1997), p.134.
[26]Moshe Safdie, The City After the Automobile: An Architect's Vision (Toronto: Stoddart Publishing Co, Ltd., 1997), p.152.
[27]Dr. James Lowenthal, Lick Observatory, University of California, Santa Cruz, as cited in The City After the Automobile: An Architect's Vision (Toronto: Stoddart Publishing Co, Ltd., 1997), p.129.

Cities in North America were essentially built for the automobile. This is partly due to the ideals of the modernist movement, which had a profound impact on architecture and urban design within this continent.[28] Le Corbusier, was one of the chief proponents of this movement. His redevelopment proposal for Paris of 1925, was, in the words of Kenneth Frampton, a "... paradoxical notion that the automobile having effectively destroyed the great city could now be exploited as an instrument for its salvation."[29]

He envisioned a new plan for Paris, built to the scale of the automobile. Unfortunately, this plan did not consider the existing structure or fabric of the city, and its ability to handle the scale of the automobile. The downtown sector, built before the emergence of the automobile, had difficulty adjusting to this new mode of transport:

> Neither the scale of traditional streets, nor the size of individual building parcels, anticipated the growing volume of traffic or the need for off-street parking ... As highways have taken over, the tightly woven fabric of urban streets have been progressively destroyed.[30]

This has produced, amongst other things, traffic congestion that has contributed to inefficient fuel use and pollution. It has also placed an enormous strain on the existing road infrastructure, as commutes that normally only take a few minutes sometimes take hours during high-intensity periods.

One commonly used solution has been to increase the size of the roads along major arteries or increase the number of roads to accommodate for a higher volume of traffic. While this works in the short term, there are problems associated with this type of planning. An increase in the size of roads or number of roads does not always result in lower congestion levels on roadways. It may actually contribute to increased levels of automobile use, more opportunities initially exist for easier commutes by car. If the same ratio of car to people exists, the opportunity no longer will exist with expanded populations.

By increasing the size and number of roads, the scale of the urban environment also expands, well beyond the measure of the human being. As the urban fabric unravels, so does an essential component of urban life, the pedestrian precinct.[31] With few streets devoted for pedestrian use, it is somewhat uncomfortable to travel downtown by foot. Narrow sidewalks and wide separation between buildings do not facilitate connection between the individual and the built environment.

As mentioned earlier, the station can provide an alternate means of transport to the automobile. By creating a hub of various modes of transport, the station can service commuters traveling regionally or between sectors in the city. What occurs in some station designs, however, is that the automobile still dominates the presence of the station. Often a sea of parking is provided, giving the automobile visual and spatial precedence over

[28]Donald L. Miller, The Lewis Mumford Reader (New York: Pantheon, 1986) p.172.
[29]Kenneth Frampton, Modern Architecture: a Critical History (London: Thames and Hudson Ltd., 3rd Edition, 1992), p.155.
[30]Moshe Safdie, The City After the Automobile: An Architect's Vision (Toronto: Stoddart Publishing Co. Ltd., 1997), p.5.
[31]Moshe Safdie, The City After the Automobile: An Architect's Vision (Toronto: Stoddart Publishing Co. Ltd., 1997), p.18.

the station. A hierarchy suited to the train needs to be established, with each type of transport "... in its proper place and to its proper extent ... in the order of increasing speed and capacity."[32]

The station can also be a means of rediscovering the pedestrian district that has been lost. As a transport hub, it would bring the essential ingredient for vibrant life ... people. By examining the program of the station, it can become more of a destination point rather that just a transport interchange. In some senses the station can become a small city itself, providing a wide range of services and amenities such as retail shops, restaurants, offices and informal markets.

To develop a successful pedestrian precinct, the station should be prominent, and provide safe access for people. To develop a strong urban presence, the building should be close to the street edge to establish public importance in the setting. Prominent street front entries and generous pedestrian circulation will encourage people to pass through and explore the station.

The entry and pedestrian walkways within the station should not be too large. With massive urban buildings such as a high-speed rail station, one could be overwhelmed with the scale of the structure and the amount of activity. To provide a more human scale, the scale of the station needs to be broken down into comprehensible components, through devices such as interior throughways and smaller passages.[33] The scale of the shops and offices should follow the example of the historical warehouses and building blocks to provide for a more human measure.

Discontinuity Between Past and Present

Fragmentation within the urban fabric can also be seen at the level of the built environment. There is a great deal of discontinuity between past and present buildings within Edmonton. This seperation is particularly evident in the downtown sector, where the old brick and stone warehouses have little resemblance to the more modern steel, glass and concrete skyscrapers.

Modernism rejected historical precedent in favour of the development of new materials and methods of construction. This rejection of history can also be seen to some extent in Le Corbusier's plan for Paris mentioned earlier. Essentially, Le Corbusier wanted to tear down the historic core and replace it with a new core of free-standing office towers set in open public garden space.

This proposal was widely adopted in North America, devoid of the historical constraints associated with Europe. Le Corbusier, however, ignored the main ideal of the city to enrich the future by maintaining visible structural links with the past.[34] Although some of the more famous historic buildings were to be preserved, little thought was given to the nature of these buildings. They lost their

[32]Donald L. Miller, The Lewis Mumford Reader (New York: Pantheon, 1986) p.176.
[33]Moshe Safdie, The City After the Automobile: An Architect's Vision (Toronto: Stoddart Publishing Co. Ltd., 1997), p.87.

significance because there was not the same interaction within and around them. In essence, these buildings were treated like isolated monuments. Le Corbusier failed to realize that these buildings gained their value through use, not just appearance.

There are, however, several reasons why buildings of the past are not built today. Construction techniques and materials have changed dramatically between earlier structures this century and later ones. In addition, sufficient anomalies are prevalent to confuse the romantic picturesque and discredit simplistic notions of a folk architecture unaffected by extraneous influences.[35] This is especially true of western Canadian architecture, which has borrowed almost its entire existence from outside sources.

To fit within the contemporary urban environment, the station design should try to find a happy medium between the past and present built environment. As an old building type revisited, the station can relate to both historical and contemporary conditions. Kevin Lynch talks about the use of selective collage to help narrow down the elements the designer uses to relate to a particular condition. Selective collage allows for a greater awareness of the depth of time. Fragments of former structures would routinely be incorporated into new construction, and current use would be asked to signify previous use, or the activity from which it evolved.[36]

One method of selective collage is to examine buildings that have some relation to the railway. Related to contemporary rail technology, the station could utilize the materials and construction methods of the contemporary steel, glass and concrete office towers. These towers are of similar scale to the transport modes that the station will house. As an initiator of early Prairie urban development, the station also has connections with the past. Many of the old brick warehouses and brick building blocks were located downtown to be serviced by the railway. As mentioned earlier, these buildings helped form part of the pedestrian precinct of Edmonton, and can be utilized in a similar capacity for the station.

[34]Donald L. Miller, The Lewis Mumford Reader (New York: Pantheon, 1986) p.178.
[35]Chris Abel, Architecture and Identity: Towards a Global Eco-Culture (Oxford: Architectural Press, 1997), p.108.
[36]Kevin Lynch, City Sense and City Design (Cambridge, Mass.: MIT Press, 1990), p.631.

Chapter III: Reconnecting the Traveler to Time and Place

> One has dim foresight of hitherto uncomputed mechanical advantages who rides on the railroad and moreover a practical confirmation of the ideal philosophy that Matter is phenomenal whilst men & trees & barns whiz by you as fast as the leaves in a dictionary ... The very permanence of matter seems compromised & oaks, fields, hills, hitherto esteemed symbols of stability do absolutely dance by you. *Ralph Waldo Emerson, 1834.* [37]

There is a somewhat surreal nature to rail travel, as Emerson indicates, as the reality that occurs within the train appears independent from the reality that occurs outside (figure 34). Exterior objects seem to take on new forms, bending to the speed and direction of the train (figure 35). It is as if the outside matter forms itself around the shell of the vehicle, as the train glides through this environment.

Since rail travel is primarily passenger travel, we have no control over the speed or direction of the train, and thus, no control over the images we see through the window. We are casual observers to the events unfolding outside the train, and thus, are somewhat disconnected from this exterior environment. With the advent of high-speed rail, the train is now significantly faster, and the exterior images seem even more obscure, further increasing the disjunction between outside and inside. An introverted environment is created, where one relates better to what is occurring within the vehicle than the surreal-like scenarios unfolding outside. While this disconnection between inside and out can be unsettling, it is necessary to be able to venture a far distance in a short amount of time at a high level of comfort. However, at some point along the journey, we do need to get our "bearings" for stability and a proper frame of mind as to our direction.

This section will examine how architecture can help to re-orient the traveler to time and place while in motion. Specifically, the section will examine the perception and act of movement, comparing the commuter to the nomadic traveler, and the use of historical precedent and urban context to relate to the various movement patterns associated with the station.

The Perception and Act of Movement

In his book *Phenomenology of Perception,* M. Merleau-Ponty indicates that movement is composed of both an abstract and a concrete dimension. Abstract movements depend on visual representation for guidance.[38] Our perception of the space and forms around us can act as visual cues to direct movement. For example, if we are traveling at a fast speed, we may have difficulty visualizing detailed images until we are able to slow down.

Figure 34: View of a waitress serving wine to passenger while outside environment appears to pass by in an instant.

Figure 35: View on top of a high-speed rail train.

[37]Ralph Waldo Emerson, 1834, as cited in Architecture Design: "Architecture of Transportation" Vol. 64, Nos. 5/6, (May - June 1994), p. 9.
[38]M. Merleau-Ponty, Phenomenology of Perception (London: Routledge and Kegan Paul, 1962), p.113.

To be able to register objects at a high speed, they must be large and of simple form.

Visual cues associated with abstract movement can also be used to indicate changes to the nature of a path. The appropriate visual sequences can allow the traveler to be aware that, although the nature of the path has changed, it is still the same path. As an illustration, the use of objects acting as datum points along the path could give a constant measure of direction, and allow the rest of the path the flexibility of change.

Concrete movements are more tangible: they are associated with tactility and a kinesthetic sense of space and form.[39] This dimension of movement appeals to the materiality and the feel of a particular space as one moves along the path. To get a better sense of concrete movement, the tactile nature and kinesthetic feel of the path can relate to the type of movement. For instance, moving in areas designated for slower speeds, we are more conscious of the detailed patterns, such as floor material. It would make sense if the floor materiality reflected this slower speed, through a more textured feel than in faster-moving areas.

At some level, to have a more successful intervention, both the concrete and abstract dimensions of movement should be experienced simultaneously. If a space appears compressive, it should feel compressive to traverse through. For example, it wouldn't make sense if the space were filled with detailed objects that the individual could not comprehend due to the speed of the vehicle.

While the above refers to points of reference along a path, these in and of themselves cannot be used to indicate the entire path. A point of reference on a path can only describe its own particular sector of the path[40]. Points within a path may be read differently if they are reviewed independent of the whole. Thus, the architectural response must respond to the nature of the path rather than simply a point along the path. Since commuters pass through the station on a regular basis, an understanding of the nature of their movement patterns will help to establish an appropriate architectural response for the station.

Comparing the Commuter to the Nomadic Traveler

While most people do not live the life of a gypsy or nomad, we do spend a lot of time in motion, especially those individuals who regularly commute. For both the nomad and commuter, travel is essential for survival. Where the commuter and nomad differ is the nature of their paths that they take. The nomad travels in pursuit of elusive resources. Once the resources have been depleted in an area, the nomad moves on to find these resources in other destinations. The commuter travels because their home site and work site are separate, either by choice or necessity.

[39] M. Merleau-Ponty, Phenomenology of Perception (London: Routledge and Kegan Paul, 1962), p.113.
[40] Andrea Kahn, Sites Architecture: " Nomadic Architecture" (New York, Lumen Inc., 1990), p.89.

Nomads randomly journey through extensive territories.[41] This affords the nomad a greater level of control over their movement patterns, as they are not assigned to a fixed path of motion. It also gives nomads a stronger connection to place and time, as they are forced to engage their surroundings both visually and kinesthetically anew. For the nomadic traveler, individual points along the path have little meaning, as they are a collection of a greater whole.[42] This is because the nomad is not concerned with establishing settlements, and each point along the journey is always addressed anew. As a result, points along the path mean less than the actual journey itself.

Commuters usually do not traverse through their territory in a random fashion. Since they travel in vehicles rather than by foot, they are subject to the ordered patterns of movements associated with these vehicles (like roads for cars and buses, and rail lines for subways and regional trains). This is usually because the distance of the commute is too great to undertake by foot. As a result of a more defined path, commuters occupy less territory and have less control over their movement patterns than do nomads. Their territory is constricted to the areas along the route or simply the route itself.

It can be argued that travel in a mode of transport other than our own body disconnects us from a sense of both abstract and concrete movement. This is particularly true when we are passengers, and have no control over the direction the vehicle takes. Visually we are aware of our surroundings, but we have difficulty connecting to the external images because they pass by in an instant. Since the vehicle physically isolates us from the environment, we do not have a kinesthetic sense of how it feels to travel at such high speeds.

The journey of the commuter is often the same path repeated, especially if the path chosen is one that elicits the least amount of time and resources out of the commuter. Thus, unlike the nomadic traveler, the commuter begins to establish a ritual or routine in regard to the path chosen. A ritual or routine, "... implies a near-frozen relationship between action and space. It institutes a new order after disorder of the original event."[43]

Unfortunately, this ordered repetition contributes to the disconnection between commuters and their surrounding environment. The same scenarios occurring on a daily basis passes by without much notice. It is only when something significant along the route changes does the commuter become aware of their surroundings.

The commuter, like the nomad, is also not concerned with establishing settlements along the path. However, points of arrival, departure, and interchange between modes of travel, can become significant. At these points, the commuter must engage his or her environment, both visually and physically. The rail station encompasses all these points and can be useful in helping commuters re-orient themselves to their surroundings.

[41]Andrea Kahn, Sites Architecture: " Nomadic Architecture" (New York, Lumen Inc., 1990), p.90.
[42]Andrea Kahn, Sites Architecture: " Nomadic Architecture" (New York, Lumen Inc., 1990), p.90.
[43]Bernard Tschumi, Architecture and Disjunction (Cambridge, Mass.: MIT Press, 1996), p.126

Means of Reconnecting the Traveler to Time and Place

Providing the commuter with a sense of place and time is a complex challenge. There must be some representation of the movement patterns associated with the commute. The design must also indicate that this is a rail station, not an airport or something far removed from a rail station. The surrounding context must also be incorporated, so as not to exclude its neighbors. At some level, there should also be a relationship between these various elements to provide a richer experience to the commuter.

When studying the direction and flow of a body in motion, we are examining the body's trajectory of movement. [44] Several different trajectories will pass through the station. With all these different modes of transport converging in one area, many intersections of trajectories will occur. At these places of intersection, the travelers following a particular path must not only be aware of their own path, but the nature of the divergent intersecting path as well.

A hierarchy needs to be established to provide order to the trajectories. Trajectories that will have the greatest impact on station design should be considered most significant. The most significant trajectories of movement within and around the station are those for the high-speed rail, the subway system, the automobile, and the pedestrian.

Matter in high-speed rail travel, more than any of the other modes of travel, appears to be temporary. As Emerson observed, and which we still find today, objects seem to dance by in an instant and lose their solidity (figure 35). While in motion, the surrounding environment alters itself to a horizontal geometry, as large vertical objects appear bent and stretched flat. Details and ornamentation are difficult to decipher and become irrelevant. Only when we slow down this motion are we aware of the true nature and composition of these objects. To be able to register anything at such a fast speed, objects must be of significant magnitude and spacing to be clearly distinguishable.

When traveling via high-speed rail, cities seem to be next door neighbors. Some trains are capable of speeds over 300 km/hr, which makes it seem like the regional distances between cities have been condensed. These trains can also transport a large number of people. To relate to this nature of high-speed rail, the space and form devoted to it should be the main focus of the station.

The rail shed, seen in many large urban centres in Europe and North America, seems well-suited to express the nature of high-speed rail. A splendid example of the grandeur of the rail shed can be seen in

[44] Henri Bergson, Matter and Memory (London: George Allen and Union Ltd., 1950), p.246.

the 1854 Paddington Station II, in London, England by K. Brunel and M.D. Wyatt (figure 36). Rail sheds, however, were not common in most western Canadian stations. The size of cities and the nature of train travel in the past did not justify architecture on such a grand scale. Now, cities in this region are quite large, and the magnitude of high-speed rail warrants the use of the rail shed.

Although the capability of the Neo-Classical arch appears appropriate for the shed, it bears little relation to western Canadian station design. Other characteristics of this style, however, can still be employed to relate to the grandeur of high-speed rail. These include the creation of wide entries, and the use of colonnades to help create unobstructed movement throughout the spaces. Still, the shed should have some relation to previous western Canadian station design.

The CPR station in 1907 along Whyte Avenue (figure 14) and the 1905 CNR station near 104 Avenue (figure 15), can be employed to achieve the desired form of the shed. These stations used the Chateaux-Baronial style as their means of expression. While a replication of style and form of these buildings may be inappropriate for the rail shed, the form could make similar use of an all encompassing pitched roof. This type of roof is suitable not only because it relates to many of the smaller Prairie stations, but because it is practical considering the climatic conditions of Edmonton. The roof, however, may feel oppressive if it is unglazed like the roofs in the aforementioned stations. A truss system (similar to the 1865 Second Gare du Nord station in Paris, France by the engineer Leonce Reynaud), can be employed to achieve the desired pitched roof with ample illumination through glazing (figure 37).

The shed should articulate the geometrical shift between the horizontal and vertical when the train is slowing down and vice-versa when it is increasing its speed for departure. The shed needs to be of considerable length to reflect the tremendous amount of energy involved in starting and stopping the trains. Since the scale of the shed will be impressively large, the geometry and form of the shed should dictate the geometry and form of the entire station. Relating to the fast moving nature of the train, the shed should be expressed by a few bold elements.

The most comparable built form to the shed would be the downtown office tower. These buildings are also at the scale of the city, capable of housing a large number of people within a single complex. The size of these towers gives them a great deal of visibility from most areas within the city (figure 38). This is not to say that the shed should look like an office tower turned on its side. Rather, the rail shed should be of similar scale horizontally as the tower is vertically. The ephemeral qualities of glass and steel construction that characterize the downtown skyscraper can be used to provide light, which will help avoid the

Figure 36: Interior of 1854 Paddington Station II rail shed in London, England by K. Brunel and M.D. Wyatt.

Figure 37: Half section of rail shed for 1865 Second Gare du Nord in Paris, France by J. I. Hittorf and Léonce Reynaud.

Figure 38: 1971 arial view of Edmonton downtown skyline. The office towers dominate the landscape and are visible from a far distance away.

oppressive conditions of an all-encompassing roof. The ephemeral qualities of these materials will also help express the fleeting nature of matter in high-speed rail.

The next most important level of transit is the subway. It has the closest connection to the high-speed rail, allowing the subway to be apart of the same space as the high-speed rail. Since it is at a smaller scale, the subway would be subordinate to the high-speed rail trains.

The current Edmonton station is underneath the CN office tower, and thus seems subservient to the tower. Similarly, the main subway space can be submerged to a lower level than the space devoted to the high-speed rail. This area, unlike the current Edmonton station, should not be buried without some indication as to its presence. There should be a strong visual connection to the subway level from the main level, so that it is not isolated from the rest of the station. The subway that ran under the connecting bridge of the 1912 CPR station (figure 17) had a good link to grade level, as the tracks were open to above.

Although the subway is horizontal in movement, the overall nature of this mode of transport is as much about vertical motion as it is about horizontal motion. The subway is buried deep within the earth, and as a result, passage to its tunnels requires a tremendous amount of earth to be removed. A large void is created to allow access to the subway. The void is of a similar dimension to the high-speed rail shed. The subway, however, is subordinate to the high-speed rail and should be designed in this manner. One solution is to have the subway with a modest dimension at grade, and a grand dimension below grade.

The entrance of the subway should be subtle in its suggestion of depth, not revealing the tremendous drop until one has entered into the space. This can be achieved by dropping the level of the subway entrance, or providing a reveal to the submerged subway area. The columns formerly used in many of the Neo-Classical stations, can be effective in articulating the dual nature of this mode of transport. This is not to say that the columns should be of classical expression. They should simply be of the same measure as the columns used in those stations. The columns at grade may not appear to be significant in scale, until one is aware that the columns have been continued down several stories below grade. This will help to suggest the tremendous depth of the subway.

Brick warehouses used reinforced concrete as a protective core; it acted as a fire-retarder. The subway construction can also use concrete as a protective core, preventing the earth from filling the void created. The warehouses, though, covered the concrete with plaster for effect. The subway construction should expose the concrete, as its composition of aggregate, water, silica and cement seem like materials found directly in the earth.

Though the intent of the high-speed rail, subway system and city bus system are to decrease the use of the automobile, access for this mode of transport still needs to be provided. Cars are too popular and convenient to be eliminated, and will likely still be the preferred mode of transport even with better public transit service. The use of alternative transportation, however, can greatly curb people's use of the car.

Spatial considerations for the car should not take precedence over the high-speed train and subway, despite its fast speed. This is because the car is not able to carry a large number of occupants. It does, however, require a significant level of infrastructure to drive on, and space to store. As a result, automobile access and parking have a significant impact on station design. As mentioned earlier in Chapter II, if surface parking were provided for a large number of motorists, the area would resemble a sea of parked cars. This would detract from the magnitude of the rail station: parking would appear to take precedence over the train station. The use of underground parking, similar to the parkade at city hall, may be required to avoid such a situation. The space allocation for the cars would be maintained, and the area for parking does not take precedence over the area for the station.

When one approaches the station driving, it must be clearly visible from the street edge to establish its presence and provide ease of access into the site. The Edmonton CPR stations and the historical warehouse district provide good examples of the presence a building can have when located near the street edge. Locating near the street edge allows the individual traveling in a car to clearly see the station, and it will also provide a screen for the spaces within and behind the station from the noise of the vehicle traffic. The scale of the facade, however, should be similar to the scale of the facades of the office towers than to those for the historical warehouses. This will relate better to the measure of the automobile. The use of a glass facade can also provide views into the station, further enhancing the station's urban presence. The facade treatment should be kept to a minimal level along the roadway of a major artery road, as people will not be able to decipher any intricate details at a fast speed. As one moves away from the artery road, detailed expression should become more evident.

Designing for how people move is quite complex, as "the free movement of persons happens to be the most difficult kind of circulation to achieve, the service most susceptible to malfunction in large urban areas."[45]

To design for people, a path system needs to be established that distinguishes circulation routes from areas of rest. In the 1928 CN station along 104 Avenue (figure 39), the circulation is clearly distinguished through the use of columns and walls running north south to order movement, and the skylight above to provide a more open, public environment. Non-circulating areas, such as the ticket booth and restaurant were contained on the other side of the walls, and were lit in a more intimate manner.

A system needs to be developed to distinguish pedestrian paths from non-pedestrian paths. At Grant MacEwan Community College, pedestrian walkways are distinguished from roadways through the use of patterned stone. As the cars pass over these walkways, the motorist is aware that the floor materiality has changed. The station could use similar decorative stone to designate walkways into the station and areas designated for pedestrian circulation.

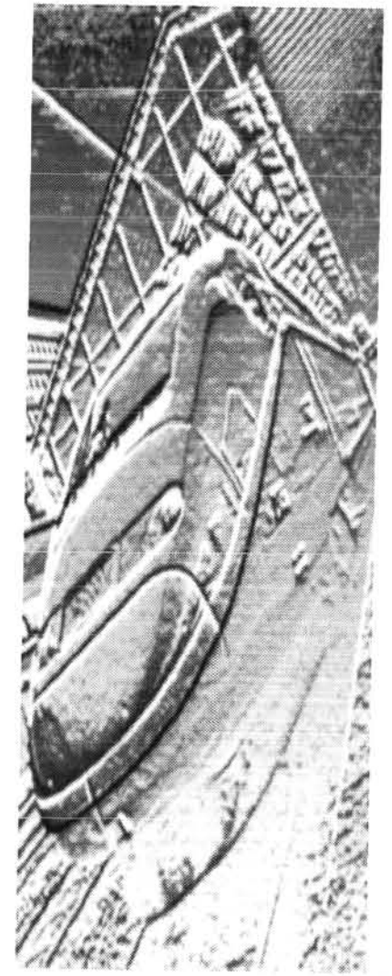
There needs to be some level of continuity between modes of transport for the pedestrian to be aware of the divergent paths and how they interrelate. Between the high-speed rail and subway, the columns that help provide structure to both the rail shed and subway levels can be spaced together to form a colonnade that will link the two modes of transport together. In addition, the all encompassing roof can serve as a measure of consistency. While the spaces and forms below the roof alter as one move through the station, the same roof system would act as a measure of enclosure.
The use of a continuous roof and colonnade would be a simple and powerful directional force. To provide a sense of termination and circulation within the station, the hotel, offices and retail venues must act as a "cap" to this direction. This is achieved by positioning these elements at the end of the rail tracks. The form and materiality of the old warehouses is useful in articulating this effect, as the blocks are solid in construction. This quality should be articulated in the same manner within the station, with retail at the base, offices in the mid-levels, and housing forming the upper levels. This will better relate to the circulation of the pedestrian, as more public elements should be easier to access.

Figure 39: Ground floor plan of 1928 CNR Edmonton Station.

[45] Kevin Lynch, City Sense and City Design (Cambridge, Mass.: MIT Press, 1990), p.48.

Trainspotting:

Conceptual Design Response



THESIS INTENT

New Era of Passenger Rail

Despite significant improvements in technology, which now allows rail to compete with air and automobile travel, the rail line design must make an urban impact to reach its full potential.

Historical Precedent

Railway station used to provide rail line with a strong presence and significance within the urban community. High-speed rail line will require its terminal station to make a similar impact within the contemporary urban community.

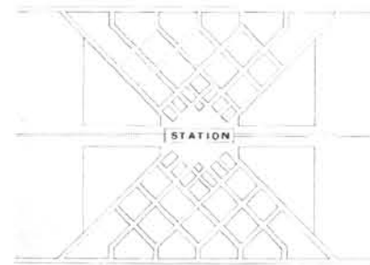
Downtown Edmonton

Downtown once centred around providing service to and being serviced by the railway. Since then, downtown has become fragmented and non-heirarchial. Station can provide a centre which the community can build upon.

Commuting Traveler

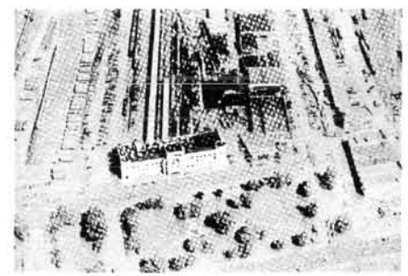
Commuters require significant landmarks and events along their daily travels to provide orientation as to their location and to break the montonous nature of the journey.

STATION PRECEDENT



Station as the Centre of the Community

Late nineteenth-century town plan designed by Sandford Fleming, chief civil engineer for the Canadian Pacific Railway.

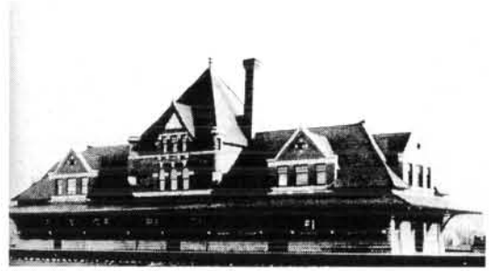


Strong Terminal Point and Transition into the City

1919 Vancouver Canadian National Terminal by R.B. Pratt defines the end of the Canadian transcontinental rail line. Thornton Park, between the terminal and Main Street is a powerful transition between the station and its surroundings.

Integrating Engineering and Architecture

0plendour of 1854 Paddington Station II train shed, by K. Brunel and M.D. Wyatt, London England.

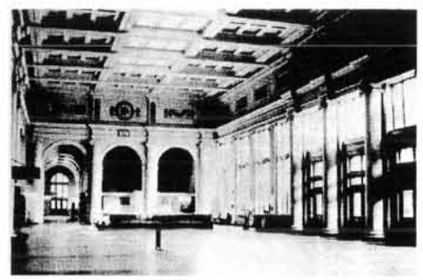


Everything Under One Roof

Chateaux-Baronial style with a pitched roof and volumes protruding out was evident in many station designs in western Canada. The 1905 Edmonton Canadian Northern Railway Station.

Grand Entrance

Classical- revival facade on the 1904 Winnipeg Canadian Pacific II Station by E. Maxwell.



Unobstructed Interior Space

Use of classical-revival collonade to define general waiting room and lobby of the 1914 Vancouver Canadian Pacific Railway station.

Rail Lines Defining Edmonton

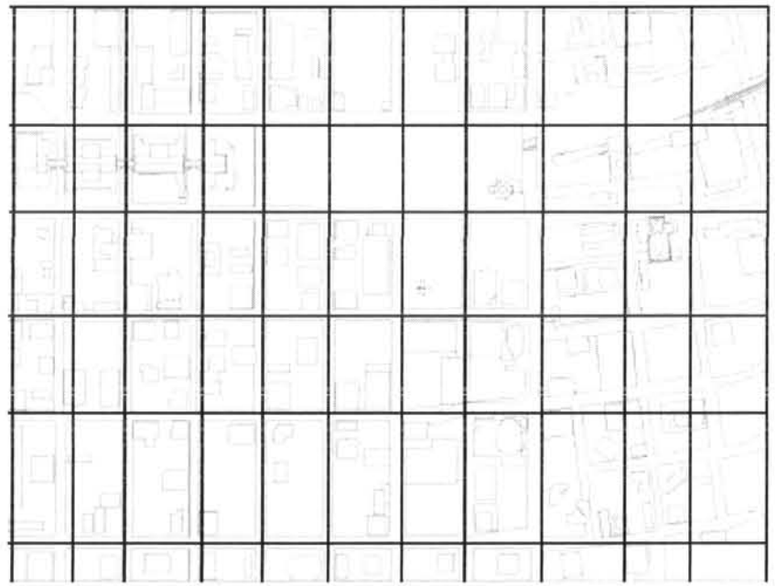
1907 Map of Edmonton indicating historic Rail routes cutting through city, transcontinentally via the Yellowhead Fur Trader Route and regionally along the north-south Edmonton and Calgary Railway line.

Central Terminal

Use of traditional rail routes for new high-speed rail line with the downtown as the centralized terminal point.

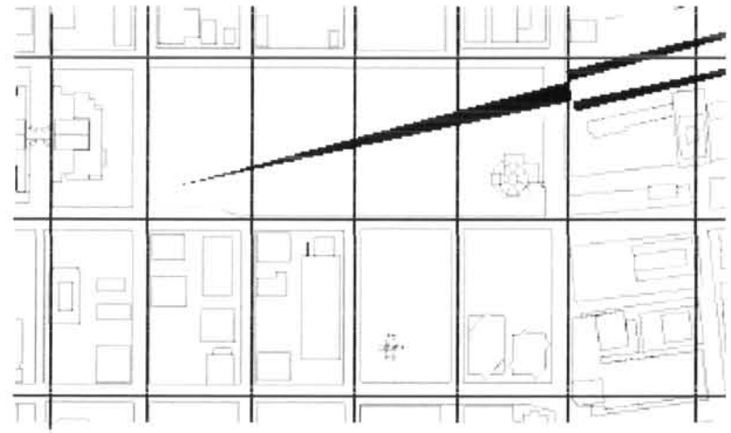
Inter-Connected City

Downtown station acting as a centralized transportation hub can help connect outlying areas through a more developed subway system,



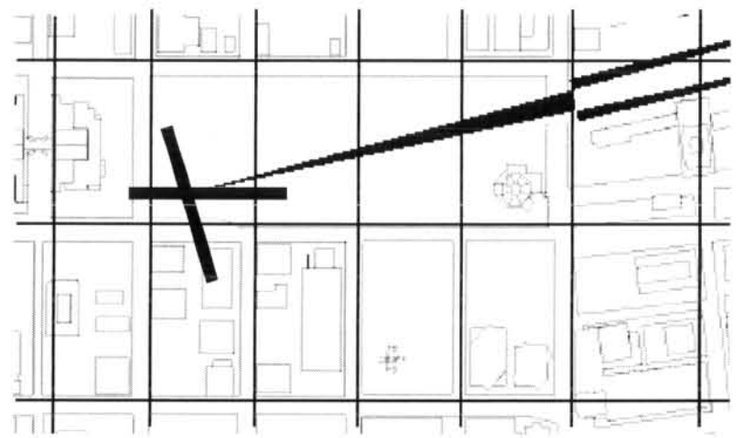
The Prairie Grid

The non-hierarchial, orthogonal prairie grid was used extensively in the planning of western Canadian towns and cities. Downtown Edmonton is predominantly defined by this type of grid system.



New Geometry

To establish a strong presence, the high-speed rail line must break from the orthogonal grid and follow its own geometry.



Creating an Public Park

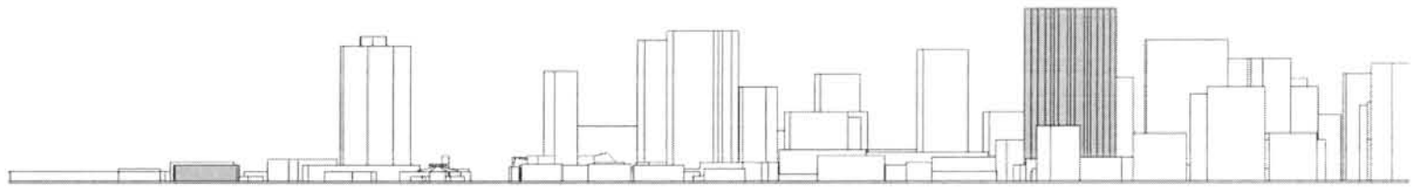
An urban park could serve as a mediating zone between the geometries of the high-speed rail and prairie grid.

Fragmented Composition

Surrounding context composed of brick warehouses, concrete megastructures and steel frame office towers clad in glass.

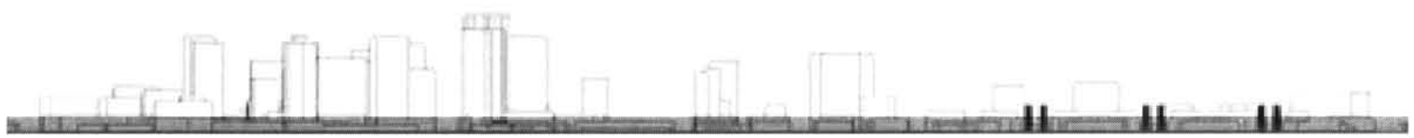
Urban Topography

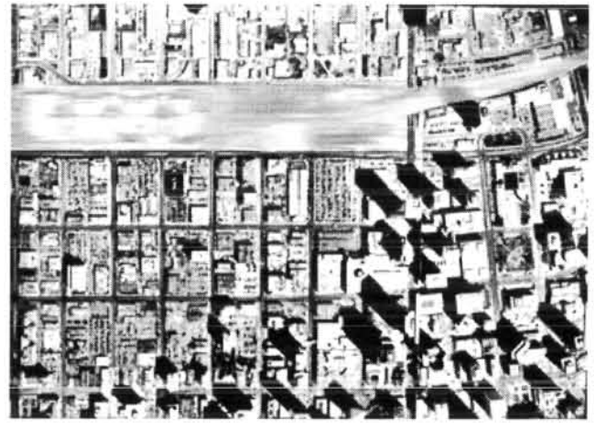
Topography climbs from the low-rise structures on the northern-edge of downtown, to the high-rise office towers along Jasper Avenue.



Following a Horizontal Geometry

Station should develop a strong horizontal architecture to compare in magnitude to the high vertical building envelope created by the downtown office towers.





Once Dominant Presence of Rail

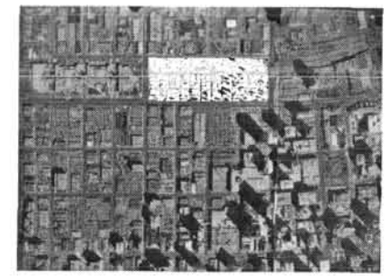
Rail yards once cut a wide path through a large area of Edmonton, defining the edge of downtown.

Lost Presence of Rail

Rail yards abandoned and redeveloped in favour of non-rail activities such as a casino and college. Attempts to re-establish the presence of rail must consider this new site context.

Relating to a Human Scale

Offices and retail in the station concourse will be similar to the layout and composition of brick building blocks within the surrounding area, designed for a more human scale. Retail and services are at the base with offices above.

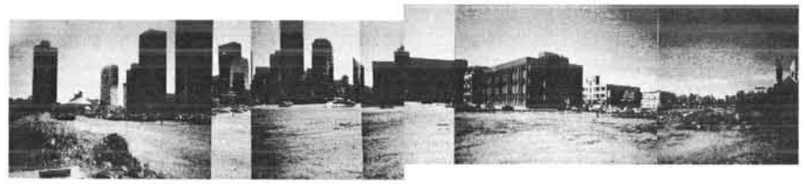


City within a city

Station can provide a multitude of services beyond a means of transportation. Many people will be commuting through the station, and require services such as retail shopping, offices, recreational activities and accomodation. The station can then act as a catalyst to redeveloping the surrounding area.

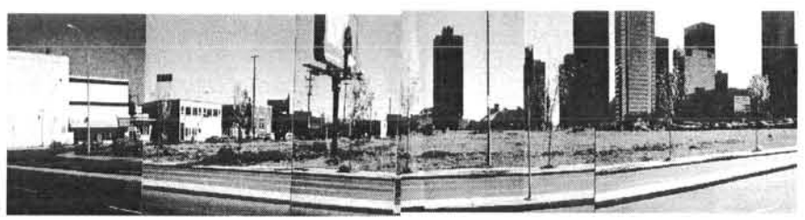
Neighbors

Site is between the CN Tower and Grant Mac Ewan Community College immediately east of the site. The Bacarat Casino sits within the south-east corner.



Panoramic view from middle of site looking south towards the office towers along Jasper Avenue.

Corner of 105 Avenue and 101 Street



Panoramic view from 105 Street looking east

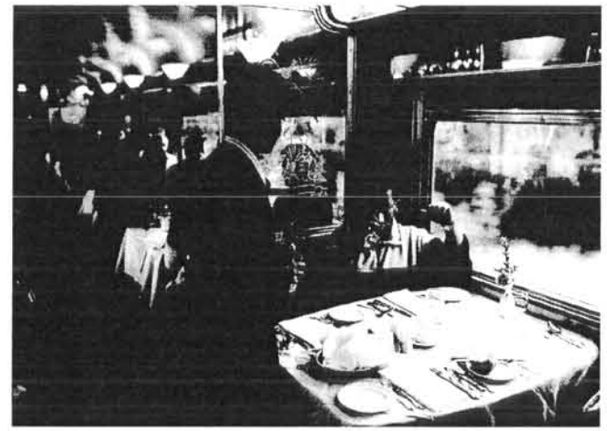
View of Bacarat Casino, with Grant MacEwan Community College in the background. Corner of 104 Avenue and 101 Street looking west.

Corner of 105 Street and 105 Avenue looking south.

RECONNECTING TO TIME & PLACE

Mundane Nature of the Commute

Commuting lacks drama due to the repetitive nature. This is further emphasized by transport interchange areas, often reclusive and prosaic in character.



Disjunction Between Inside and Outside

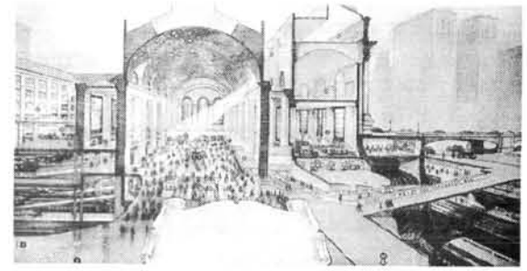
Traveler relates more to the inside environment than to what appears to be a temporal environment outside the train.

Registering Outside Objects in High-Speed Rail

Traveling via high-speed rail, outside objects become difficult to perceive, increasing the disjuction between the inside and ouside.

Means of Orientation for the Commuter

Landmarks can aid in the orientation of the traveler as to specific locations and distances left to travel.



Creating an Event Along the Route

Station can dramatize and accentuate the event of travel by interchanging different modes of travel within the same place. Rendering of Grand Central Station, New York, New York.

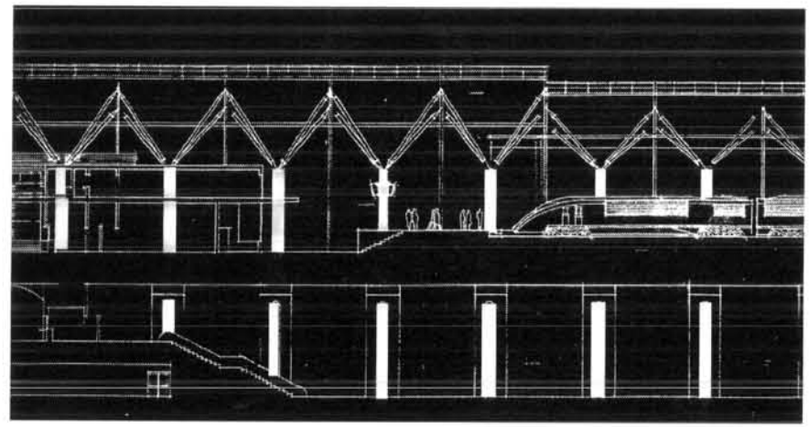
Blurring the Distinction Between Outside and Inside

The station will be the opposite of the commute by allowing transperancies between the outside and inside environments through the use of similar materials and shared spaces to prevent a sense of disconnection. Barcelona Pavilion by Mies Van der Rohe.

Landmark for the Station

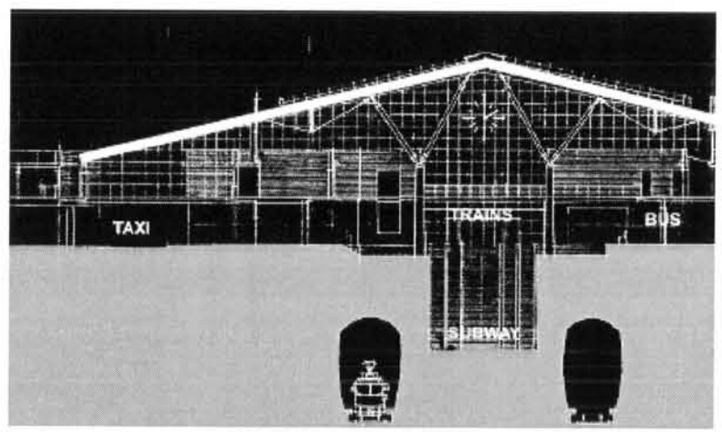
Vertical dimension of hotel can help signal the end of the line and act as a marker to the presence of the station.

DESIGN PRINCIPLES



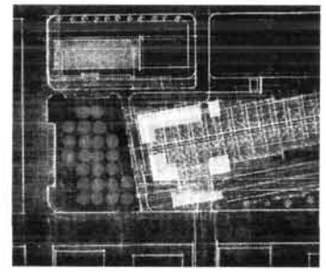
Datum Points Defining Movement

Collonade provides constant reference and direction within rail shed, through concourse and below to the subway deep within the earth.



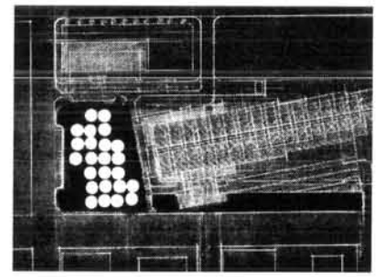
Everything Under One Roof

Various modes of transport come together under one all encompassing roof, eliminating isolation between the different types of commuting.



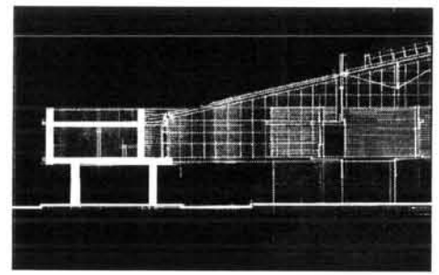
End of the Line

Building blocks of brick and concrete define the station concourse and relate to surrounding context. Together the blocks signal the termination of station.



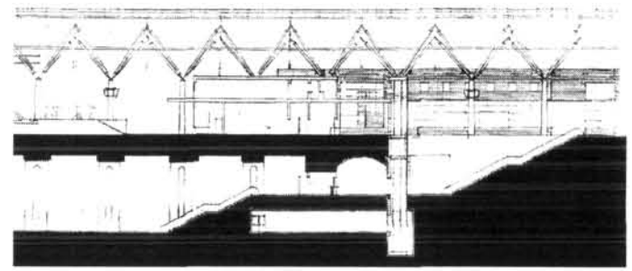
Sharing with the Community

An urban park creates a special place within the downtown community, providing relief between the station and its surrounding context. The park helps create a dynamic entry, acting as a soft space within a hard environment.



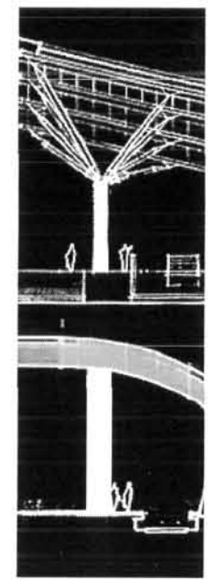
Street Presence

Administration block increases the visibility of the station by its proximity to the street. The block is raised on pilotis to provide a clear view street view of the main entrance. The space between the block and the rest of the building provides a grand entry for those arriving by vehicle.



Powerful Descent

Dramatic descent to the subway platforms below articulated by the sculptural qualityof the circulation path and the grand spaces created by the arches.

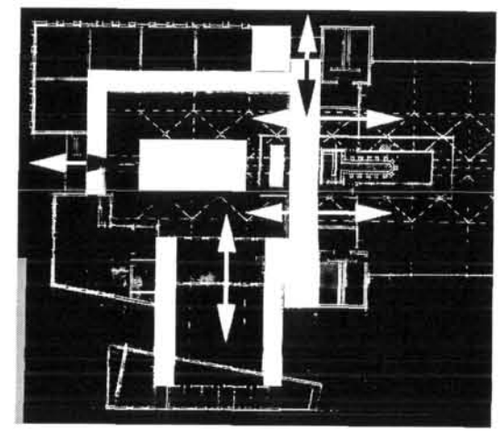


Transition from Earth to Sky

Column helps support light tubular steel structure that defines lightness of the rail shed. Column thickens as it continues down to support heavy arches that push the earth back from the subway below.

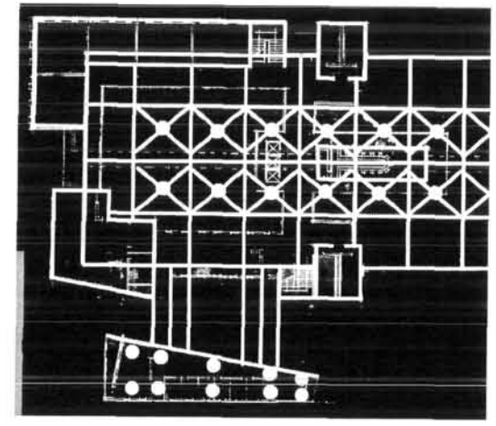
Location

Located downtown between Grant MacEwan Community College and the old VIA Station, the new station will help for an edge to the downtown and gateway to the north of Edmonton.



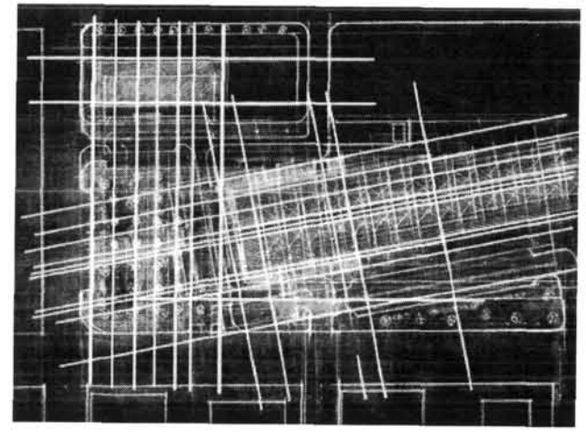
Circulation

Multiple entries and circulation paths articulated in a clear manner along the rail line axis .



Structure

A combination of the rail shed and building blocks.

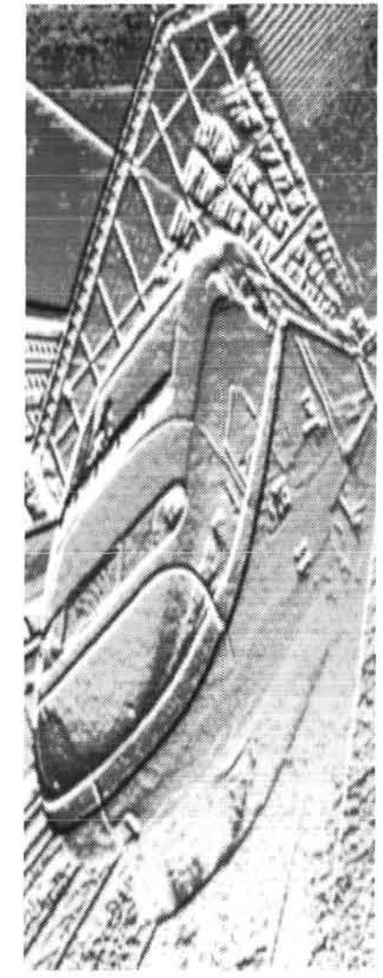


Geometry

Mediates between the orthogonal geometry of the city grid and the skewed geometry of the rail lines though spaces created inbetween the massing elements and through the tree configuration.

Trainspotting:

Design Drawings



Program

Site Plan 1:1000 p.51

Section AA 1:100 p.52

Detail Section 1:50 p.53

Main Level Plan 1:200 p.54-55

1. Rail Platforms
2. Baggage
3. Security
4. Conductor's Rest Area
5. Rail Ticket Booth
6. Public Washrooms
7. Telephones
8. Commercial Retail Unit
9. Bank
10. Newstand / Gift Shop
11. Restaurant
12. Kitchen
14. Taxi / Car-Drop-Off
15. Bus / Taxi / Car Drop-Off
16. Garbage Bin
17. Urban Park
18. Subway Entrance

Level Two Plan 1:200 p.56

1. Public Lounge / Bar
2. Public Lounge / Bar Service and Storage
3. Transportation Department Reception
4. Transportation Department General Office
5. Transportation Department Director's Office
6. Lounge / Greeting Room
7. Meeting Room
8. Fitness Centre Reception
9. Workout Room
10. Lockers / Washrooms
11. Public Washrooms
12. Rentable Office Space

Subway Level Plan 1:200 p.57

1. Subway Platforms
2. Mezzanine Level
3. Subway Ticket Booth / Security
4. Underground Parking
5. Subway Switcher Room

Elevation BB 1:200 p.58

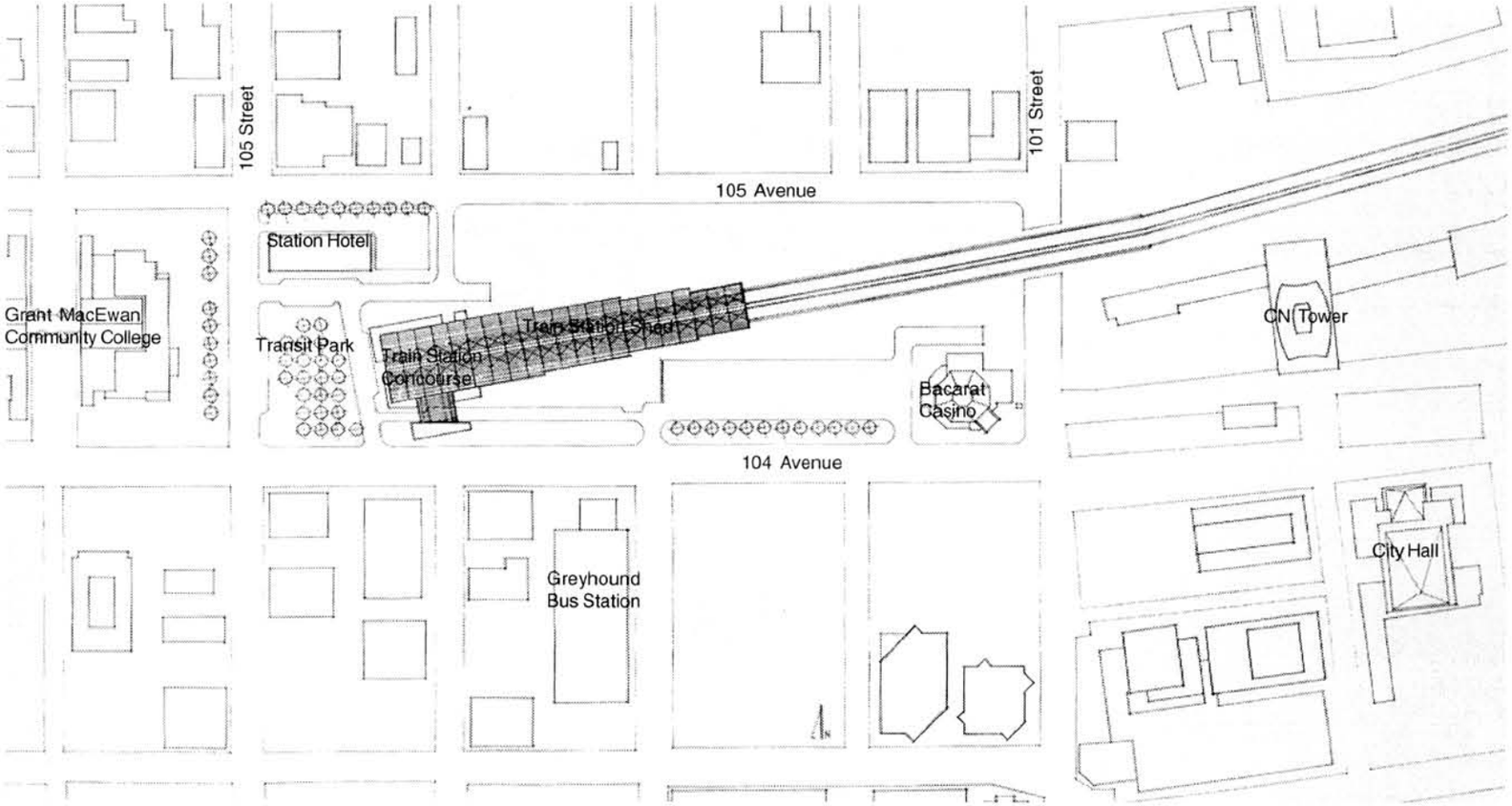
Section CC 1:200 p.58

Elevation DD 1:200 p.59

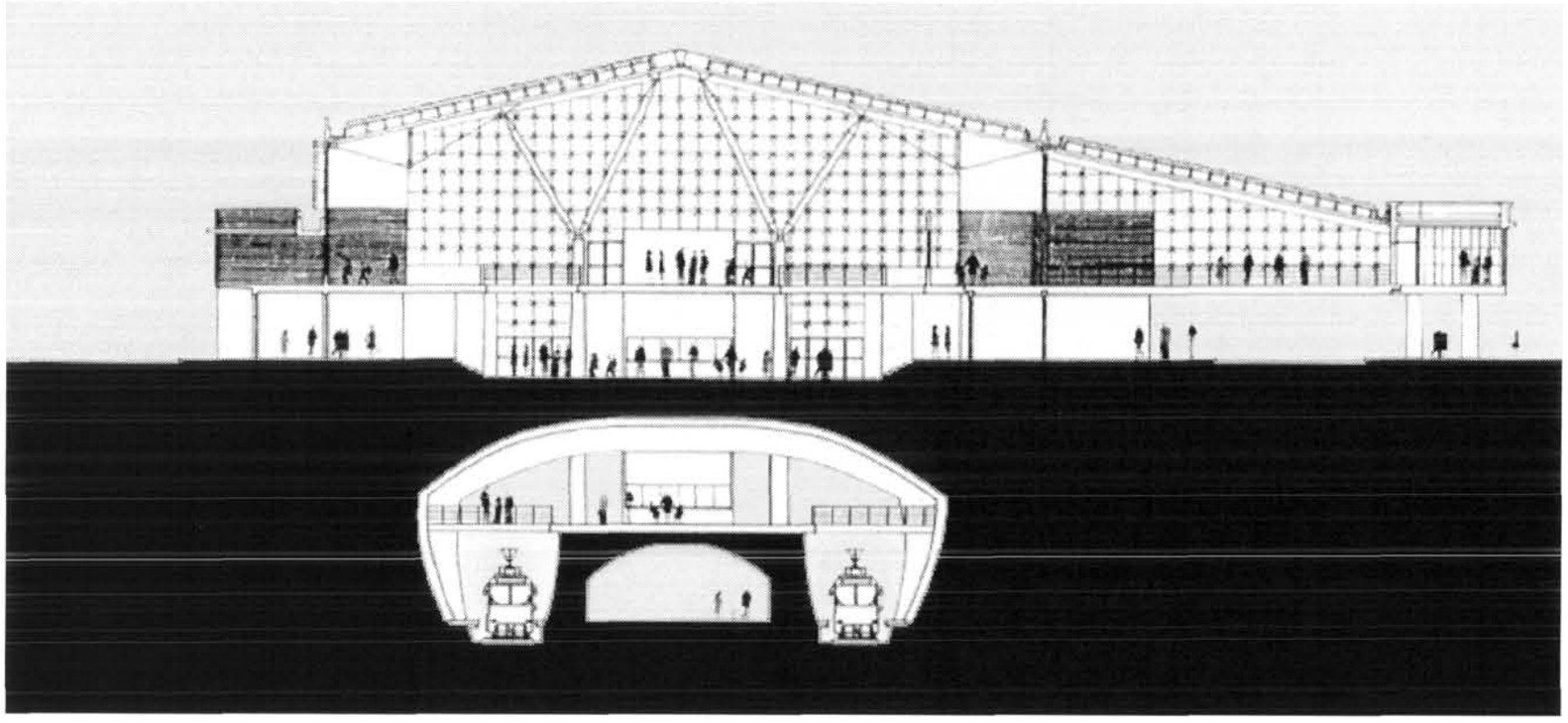
Section EE 1:200 p.59

Elevation FF 1:200 p.60-61

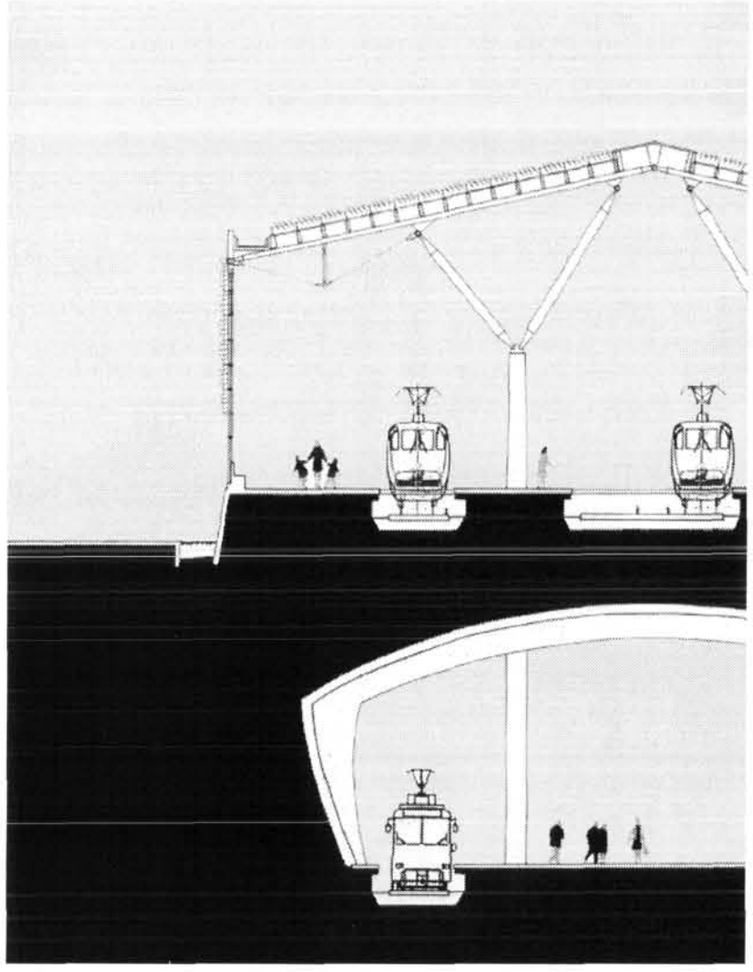
Section GG 1:200 p.60-61



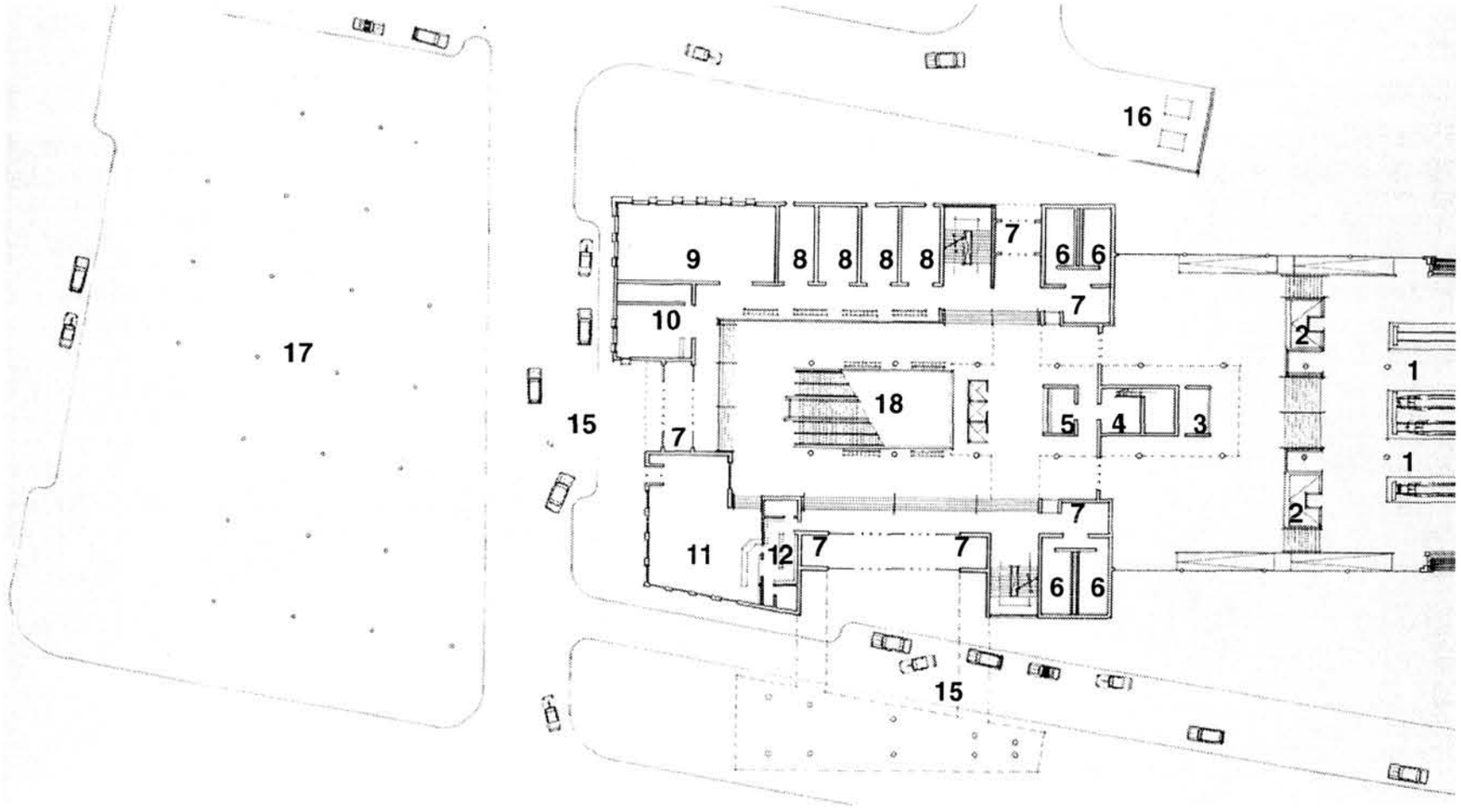
Site Plan 1:1000



Section AA 1:100



Detail Section 1:50



Main Level Plan 1:200

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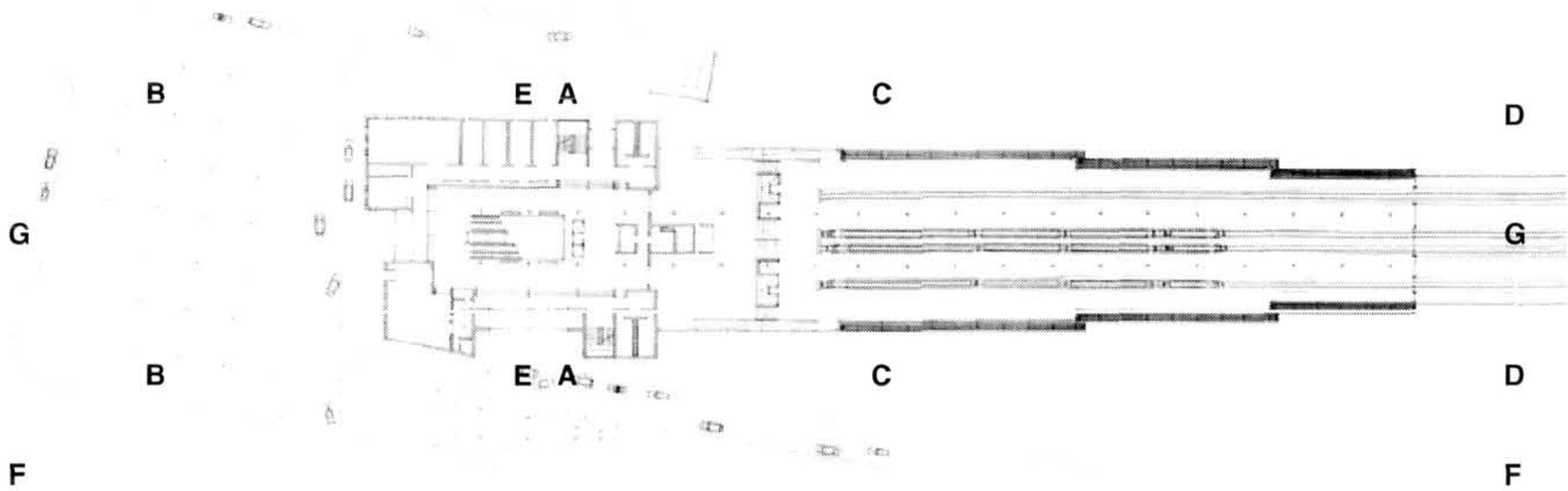
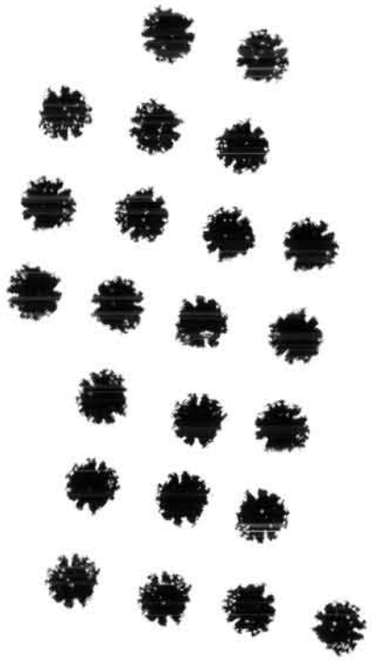
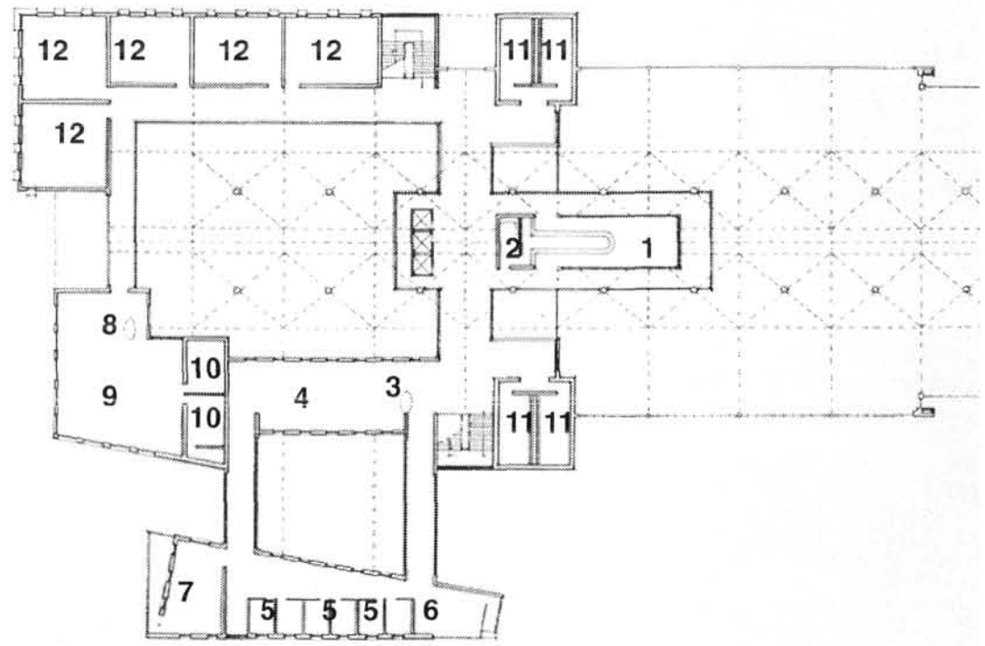
18. Subway Entrance

Main Level Plan 1:200

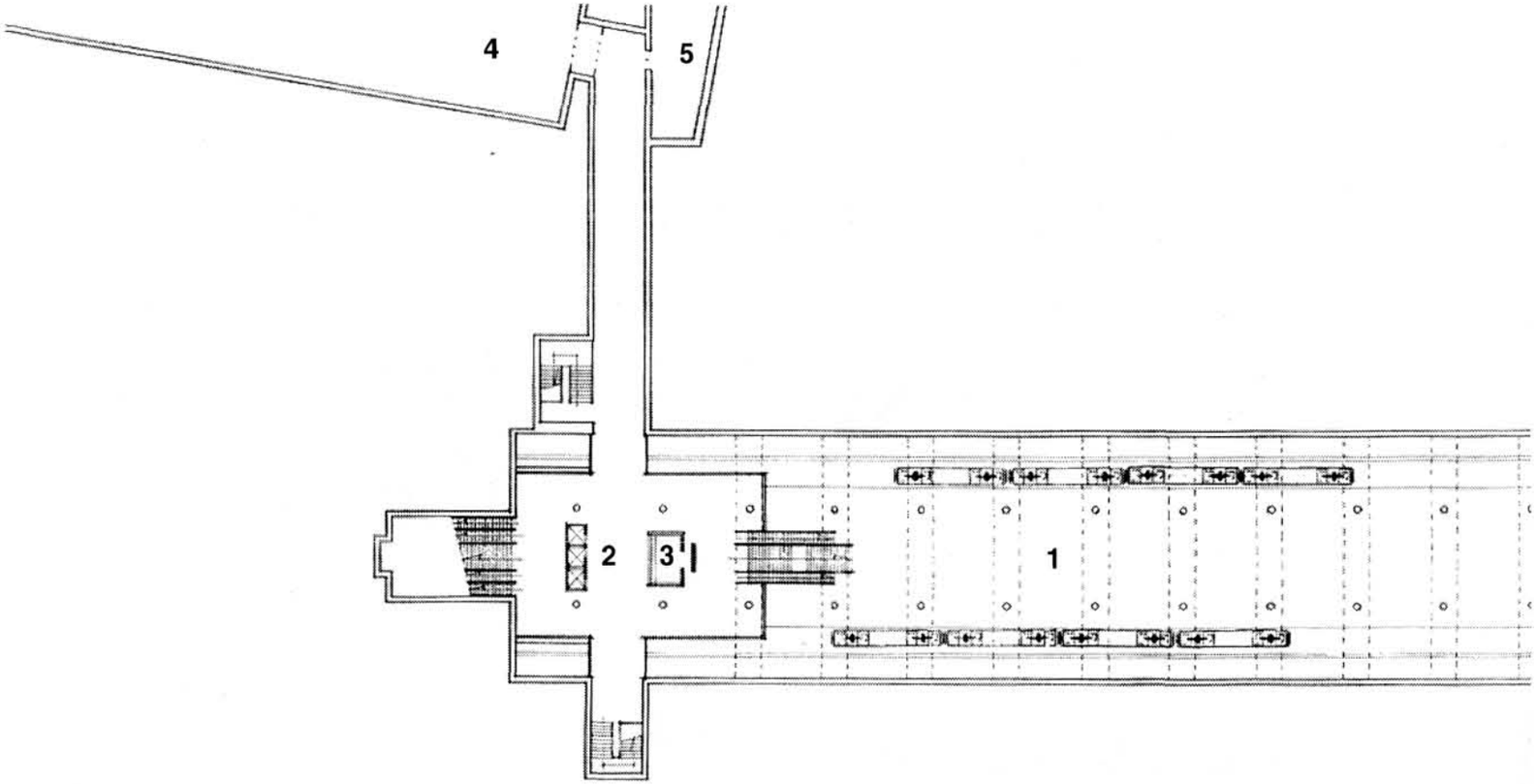






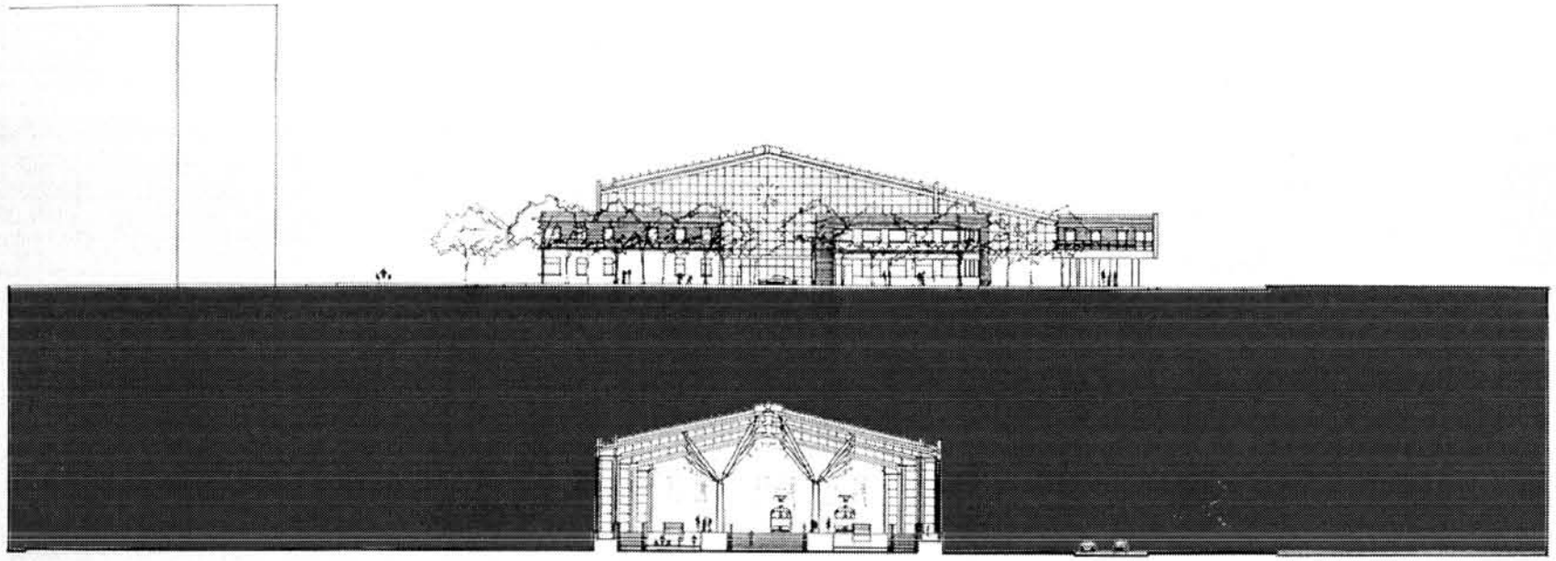
Level Two Plan 1:200

1. Public Lounge / Bar
2. Public Lounge / Bar Serviceand Storage
3. Transportation Department Reception
4. Transportation Department General Office
5. Transportation Department Director's Office
6. Lounge / Greeting Room
7. Meeting Room
8. Fitness Centre Reception
9. Workout Room
10. Lockers / Washrooms
11. Public Washrooms
12. Rentable Office Space

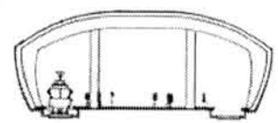


Subway Level Plan 1:200

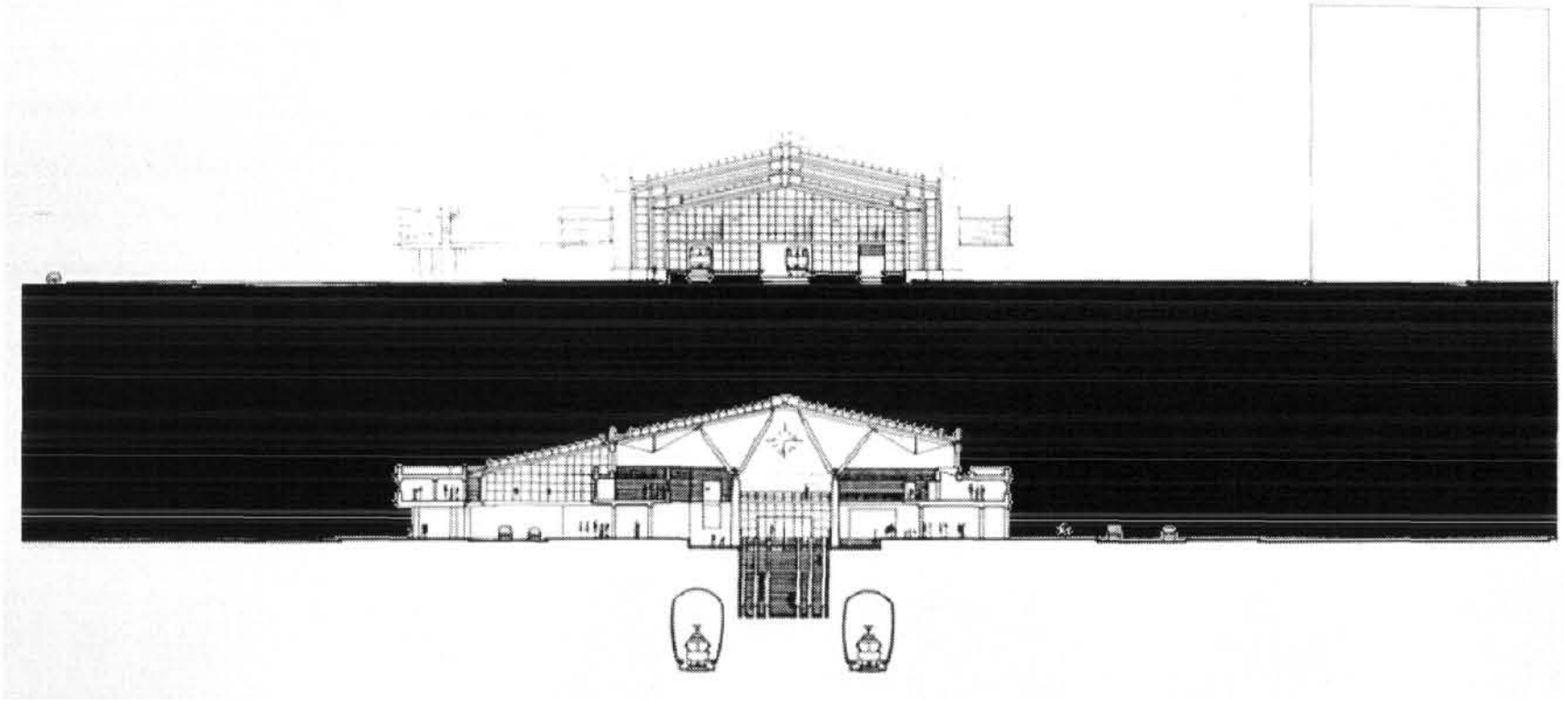
1. Subway Platforms
2. Mezzanine Level
3. Subway Ticket Booth / Security
4. Underground Parking
5. Subway Switcher Room



Elevation BB 1:200

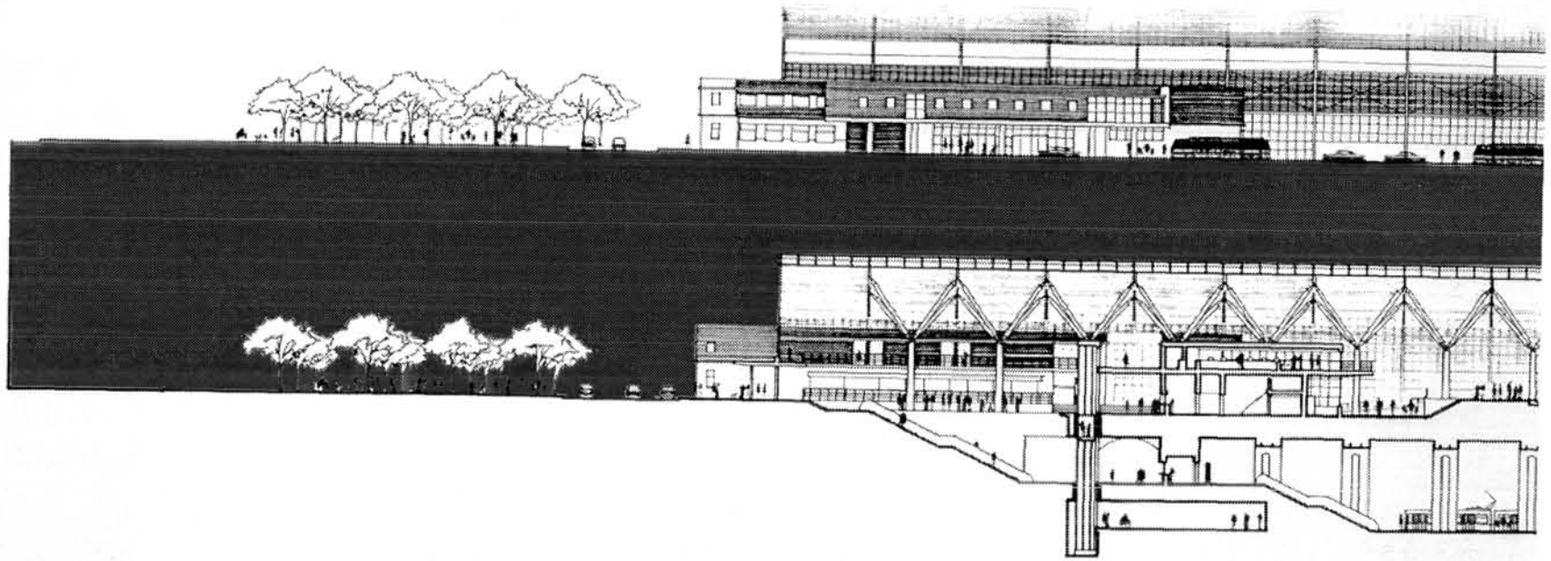


Section CC 1:200



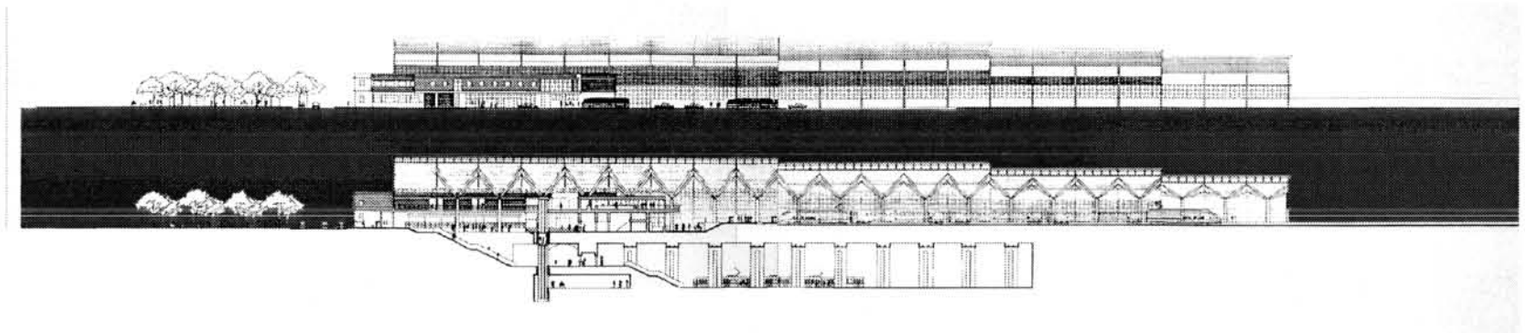
Elevation DD 1:200

Section EE 1:200



Elevation FF 1:200

Section GG 1:200

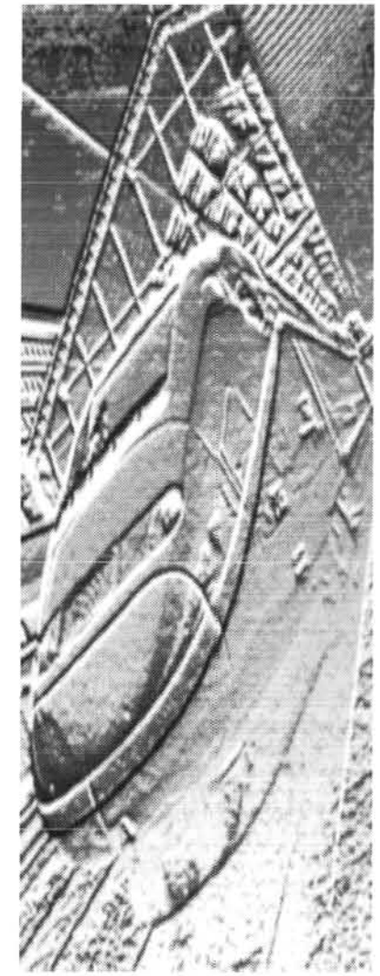


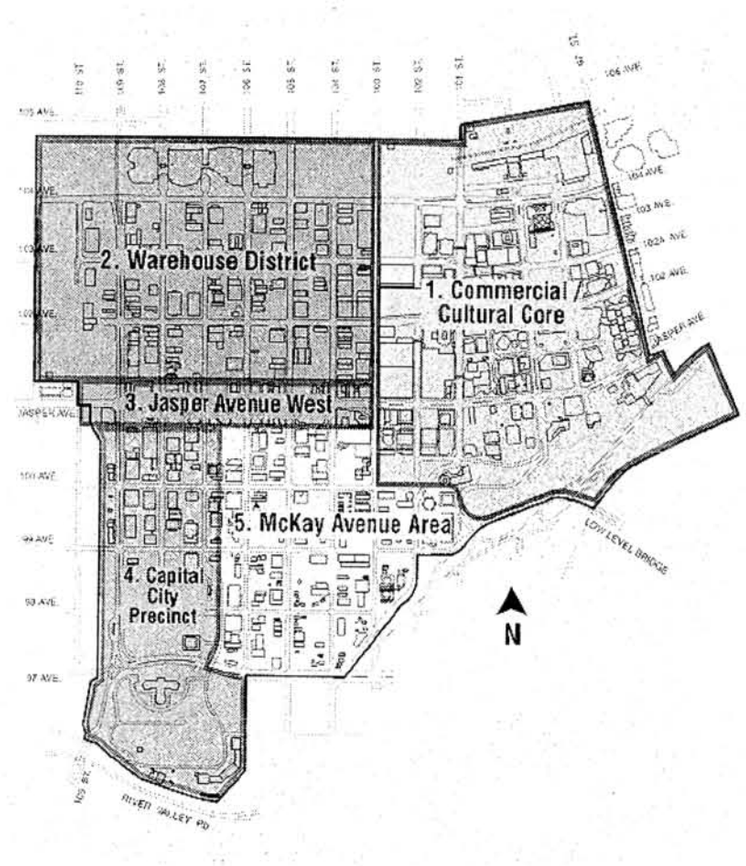
Elevation FF 1:200

Section GG 1:200

Trainspotting:

Location Map



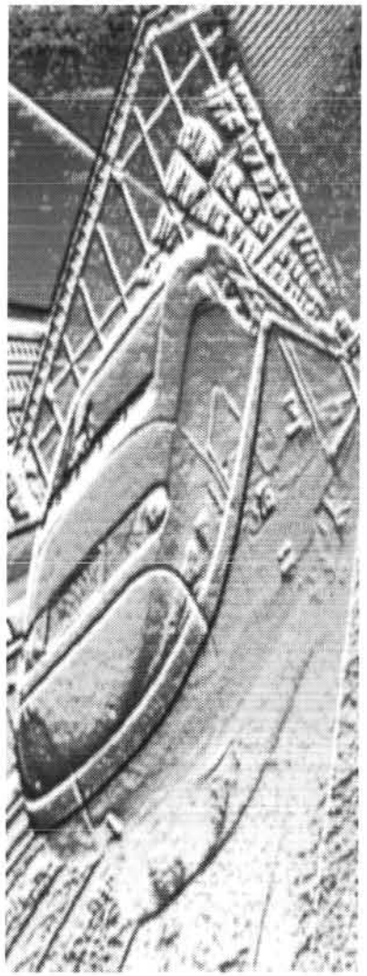


Location of Proposed High-Speed Rail Station

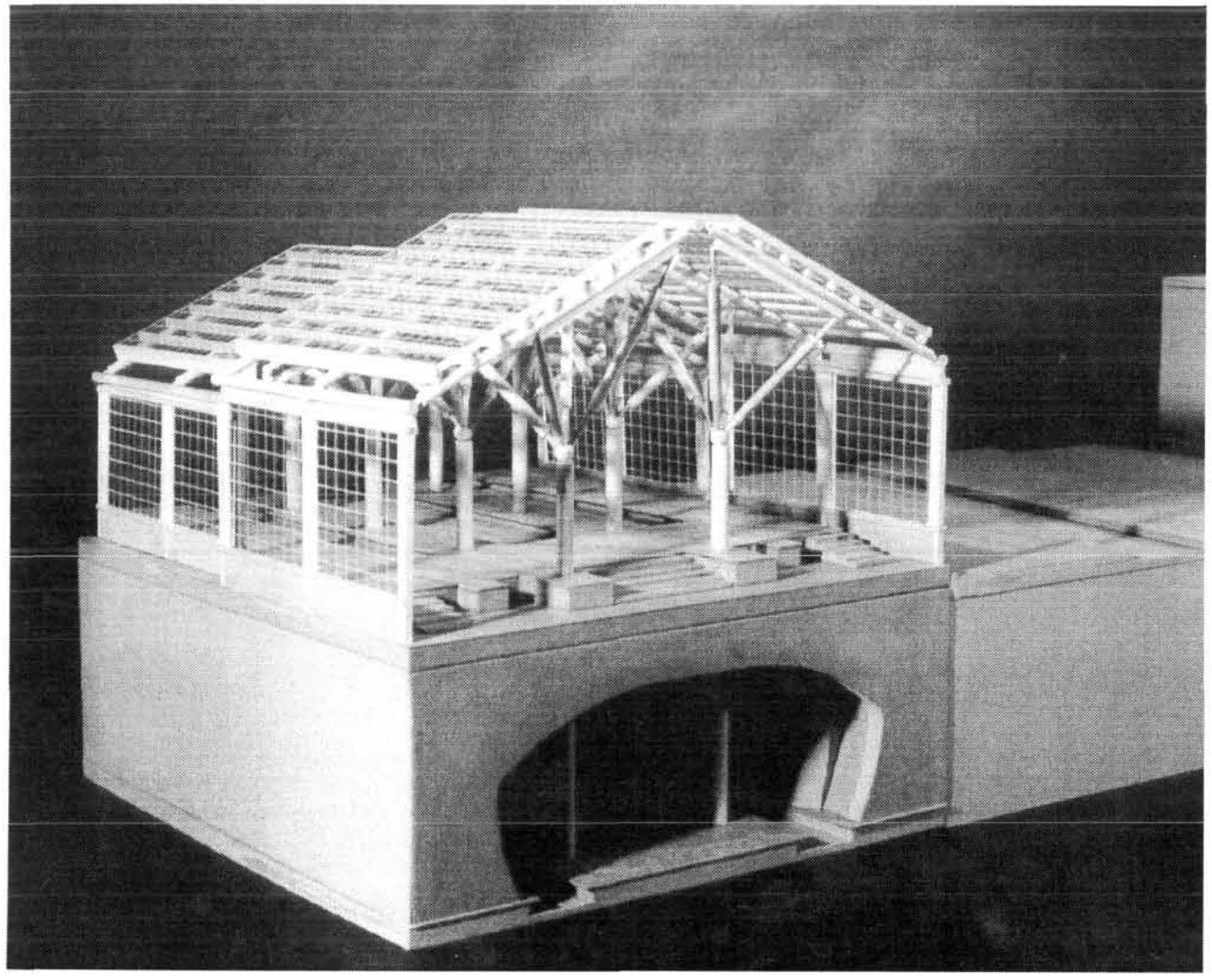
The proposed site for the high-speed rail station is situated in the abandoned lot between 105th Street and 103rd Street and between 105th Avenue and 104th Avenue. This area would be within the north-east corner of the warehouse district. Neighboring the site is Grant MacEwan Community College to the west and the CN office complex to the east. The site also borders the Commercial / Cultural Core of the city and is within close proximity to the Jasper Avenue, the primary roadway within the downtown.

Trainspotting:

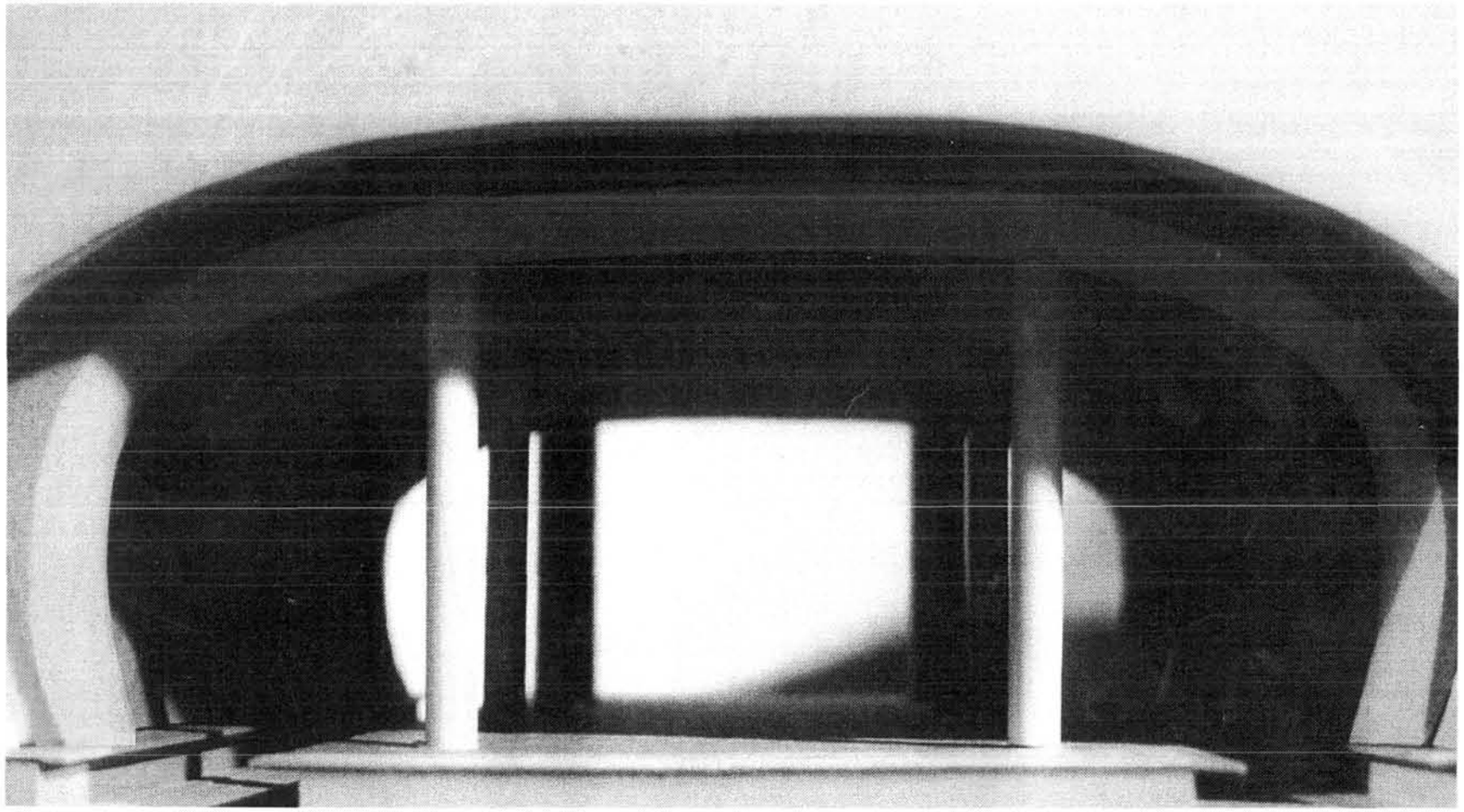
Model Views



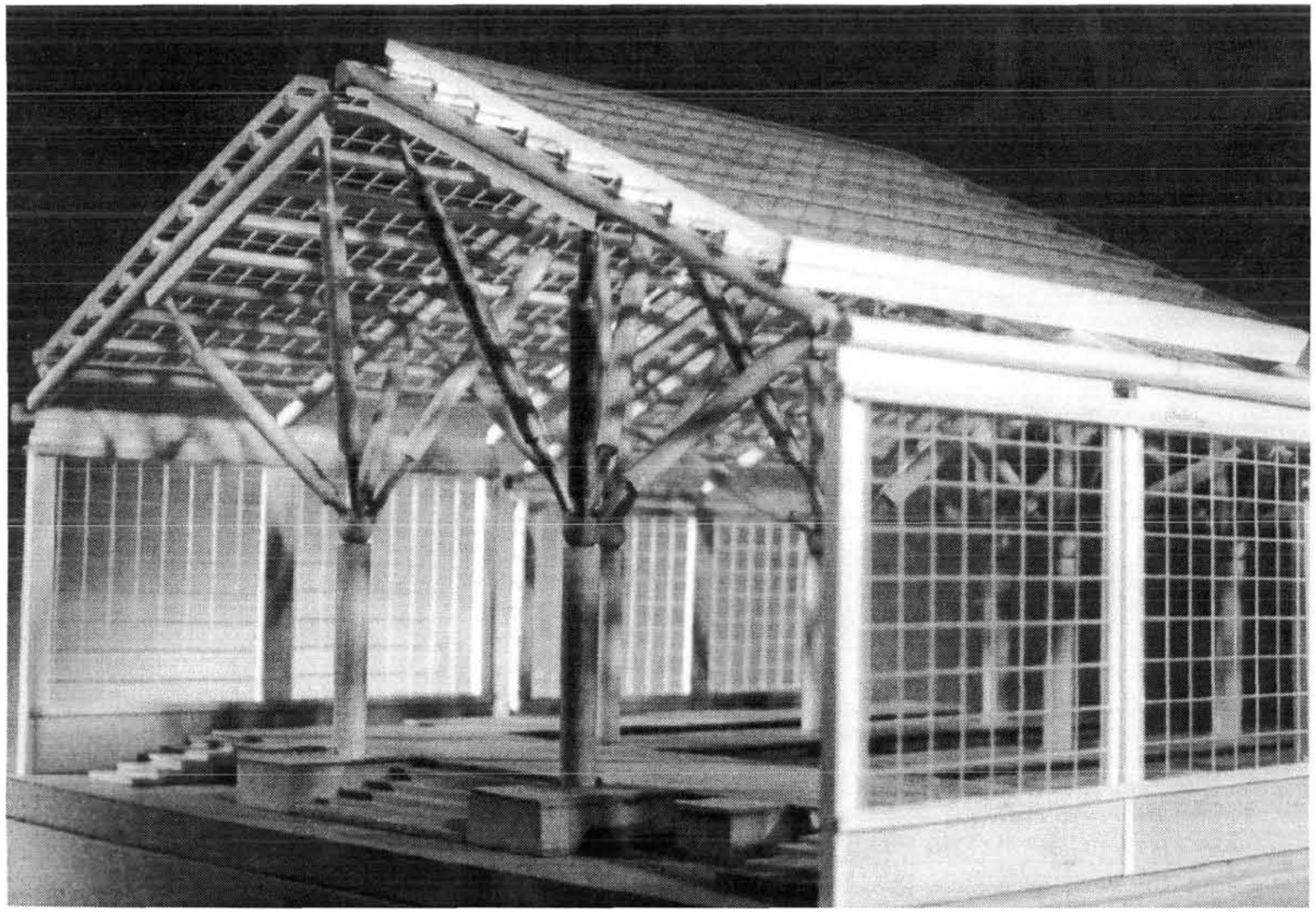
Model Views



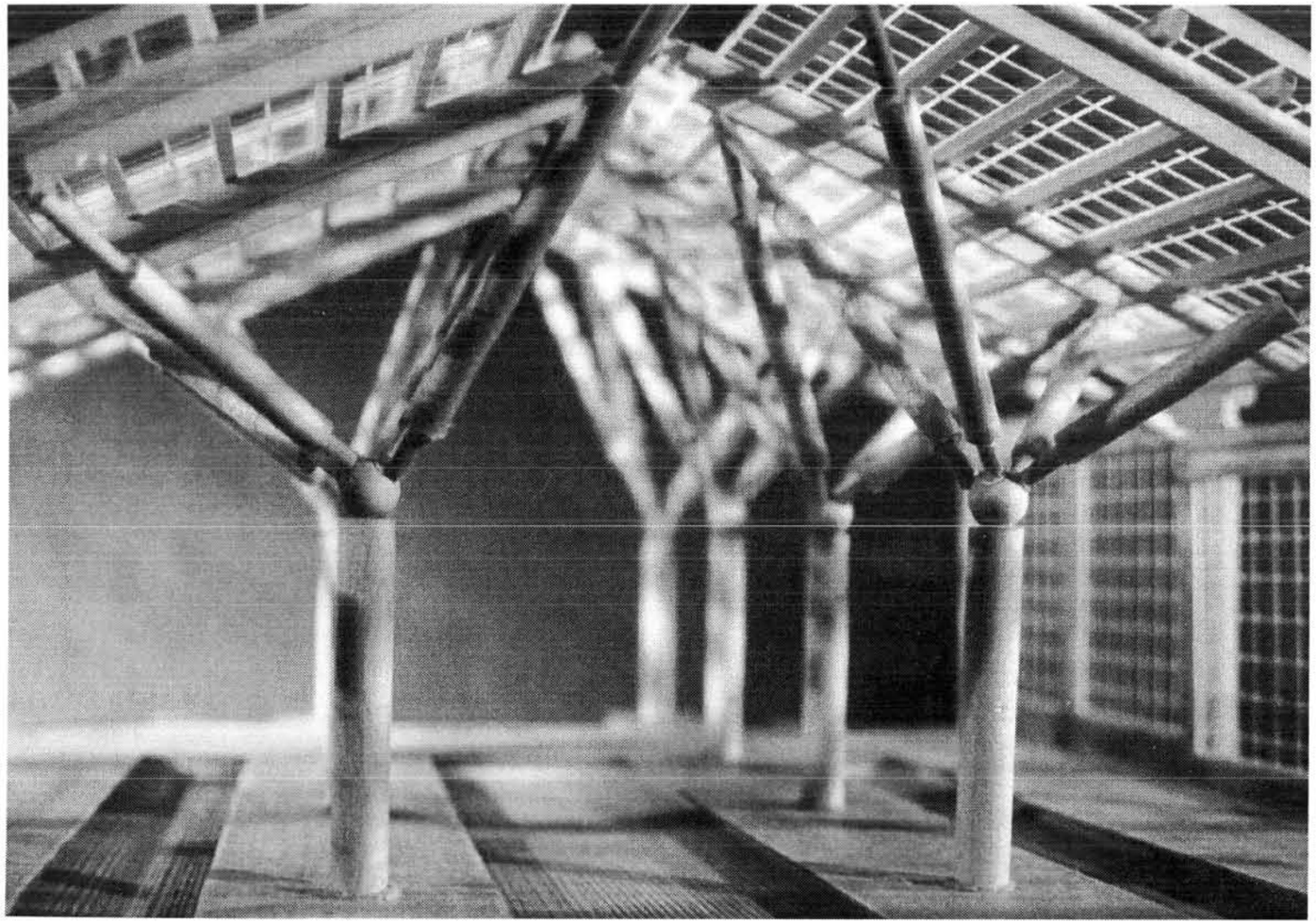
South-east view of shed and Mercer Warehouse across the street



View of Subway Tunnel



North-east view of shed



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