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A PROPOSED RAILWAY STATION FOR CALGARY, ALBERTA, CANADA

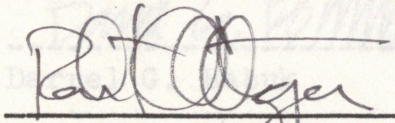
BY

DARREL G. BABUK

A Professional Paper Submitted in
Partial Fulfillment of the Requirements
for the Degree of

BACHELOR OF ARCHITECTURE

Approved:



Advisor, Director

MONTANA STATE UNIVERSITY
BOZEMAN, MONTANA

MARCH 1985

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Darrel G. Babuk

Darrel G. Babuk

March 29/85

Date

This thesis project is dedicated to my mother and father,
Margaret and William Babuk.

HISTORY

In 1875, Fort Brisebois was founded at the confluence of the Bow and Elbow Rivers by the Northwest Mounted Police. Eventually, it became part of a townsite known as Calgary, which originally grew on the southeast corner of of this junction, and it became a thriving town.

In 1883, the Canadian Pacific Railway mainline came to Calgary from the east. Much to the consternation of the original Calgarians, the tracks passed through the original townsite to the site of the new CPR station - one mile west of the settlement on CPR owned lands. The lands were surveyed into a standard CPR town plan format. As was typical, the station was located at the terminus of the most major street in the plan, which ran perpendicular to the tracks, which ran in a line.The future growth and settlemt patterns of Calgary focused on the CPR townsite. The CPR mainline continued westward from Calgary towards Banff and Vancouver.

The CPR saw continued growth of its facilities at Calgary, having built three progressively larger stations on the same site by 1910. In 1967, the CPR station was demolished to make way for the Palliser Square development of stores, offices, and an observation tower. The CPR station was relocated to the basement of this new building.

The Great Northern Railway (later incorporated with other railroads to become the Canadian National Railway) built a small station one half mile south of the CPR station, in the early part of the 1900's. This was built on a spur line that connected with the GNR mainline in Edmonton. All traffic from this station was curtailed in the late 1960's, and all tracks that led to this station have since

been abandoned and removed. This building is now vacant.

In 1978, a Crown Corporation known as VIA Rail Canada assumed all passenger rail service formerly offered by Canadian railways. VIA is much like its American counterpart Amtrak, in that it operates its own equipment on tracks leased from other railways. VIA's existing Calgary service is out of the Palliser Square Station. Current traffic through this station includes a once daily roundtrip autocoach service to Edmonton, twice daily roundtrip "Railiner" service to Edmonton, and "The Canadian", a transcontinental train going both east and west daily. Chartered tour trains use the station on an infrequent basis.

The existing Palliser Square Station was conceived at a time when passenger rail service seemed doomed, and was headed for elimination. Its space was originally designed as a cocktail lounge, and was not intended to be used as a railway station. The Palliser Square Complex itself is rather confusing and awkward, especially to people who may not be familiar with its layout - like travellers. The station's hours require Palliser Square to remain open long after stores and offices have closed, thus attracting an undesirable element into its many niches and crannies. The station itself consists of a tiny waiting area that smells of diesel fumes, cramped administrative areas, minimal facilities for baggage handling, and areas inaccessible for wheelchairs. Access to the trains is through a series of underground tunnels, which are remnants of the 1910 station.

Present traffic volumes alone would justify a larger, better planned station.

Following the Los Angeles example, the 1988 Calgary Winter Olympics will take place over a large geographical area. Olympic organizers are looking to rail travel as the primary method of transportation to the nordic and alpine events that will take place in the mountains west of Calgary. This influx of passengers cannot be handled by the current station.

VIA is testing new equipment - such as the Amtrak "Superliner" - for its transcontinental routes. VIA's existing rolling stock is a mixture of older CPR and CNR equipment, of designs dating back to the 1940's, and they are in a mature stage of maintenance. Newer, more reliable rolling stock could have a positive impact on ridership volumes.

Officially, VIA has committed itself to minor upgrading of its service between Calgary and Edmonton. Overall, the Calgary - Edmonton transportation corridor is one of the busiest in Canada. It presently is serviced by automobile, intercity bus, airplane and train. Much of the Calgary - Edmonton traffic, especially business related traffic, is handled by an "airbus" service between the Calgary International Airport and the Edmonton Municipal Airport. The Edmonton Municipal Airport is an older airport that has been engulfed by an urban sprawl. It is surrounded by homes, shopping centres and schools. Its final glide paths occur over dense high rise developments of downtown Edmonton, causing plans for some buildings to be curtailed. Mounting development and safety concerns could render the Municipal Airport useless for jet traffic. As a result, the airbus traffic would be restricted to the Edmonton International Airport, twenty five miles south of the Edmonton city limits, thus destroying the airbus concept.

The idea of a high speed rail link between Calgary and Edmonton is a reoccuring one, and a much cited Government of Alberta report has been quoted as stating that a high speed rail link would be cost effective. This report has predicted that the existing one per cent of all Calgary - Edmonton traffic that uses the train could increase to a thirty five per cent share of the market with the introduction of high speed trains. This scenario may be very plausible in light of the conditions at Edmonton Municipal Airport.

As Calgary grows, its own transportation system becomes much more important and complex. Recently, the Light Rail Transit system(LRT) was built along the CPR right of way in south Calgary. Passenger trains have not used this line since the early seventies. As satelight towns on Calgary's periphery become larger,

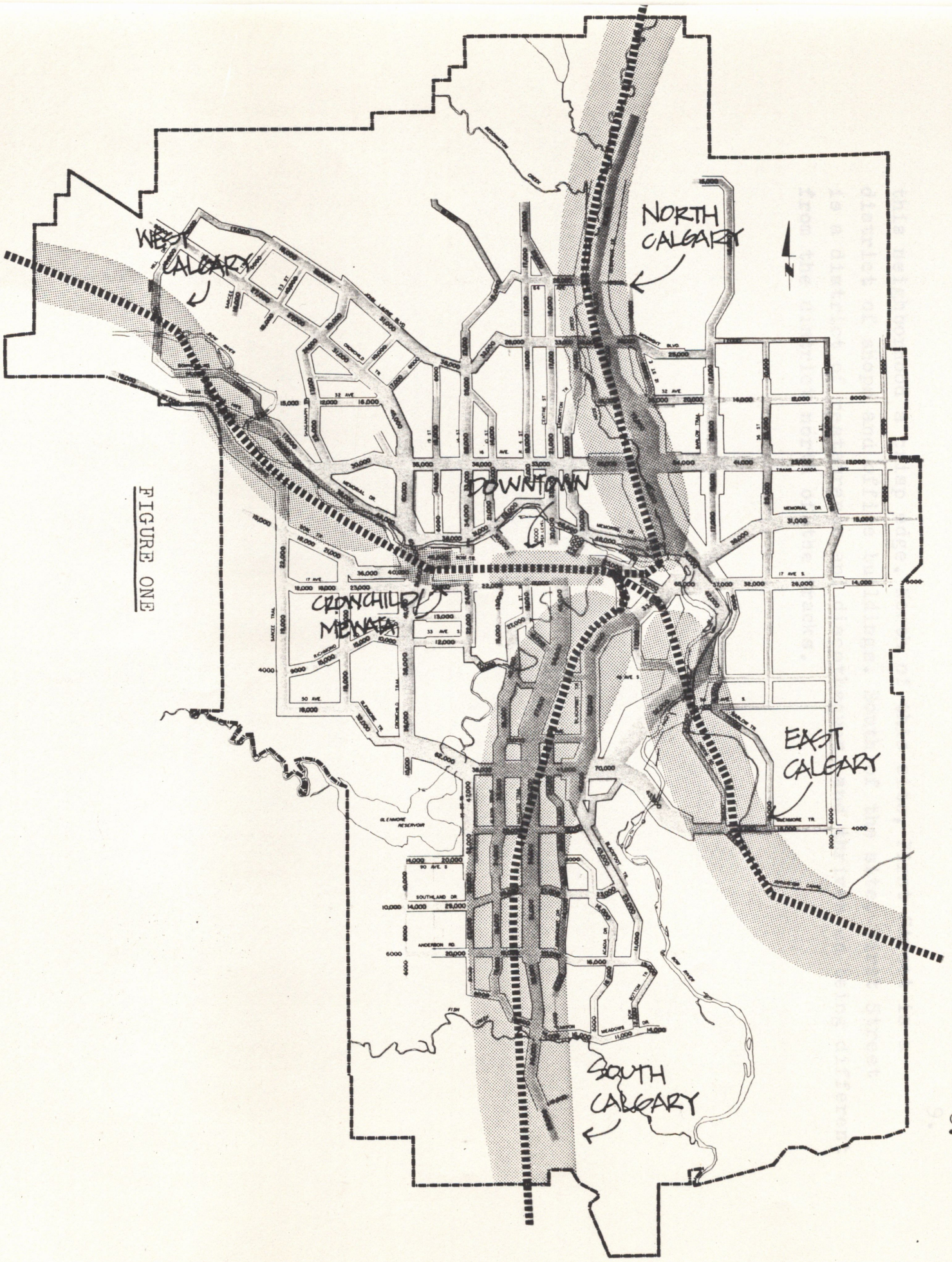

WEST CALGARY
NORTH CALGARY
DOWNTOWN
CROWCHILD/MEWATA
EAST CALGARY
SOUTH CALGARY

FIGURE ONE

this neighborhood a crisp edge. North of this site, First Street is a district of shops and office buildings. South of the site, First Street is a district of restaurants and discotheques, and thrives on being different from the district north of the tracks.

CASE STUDIES

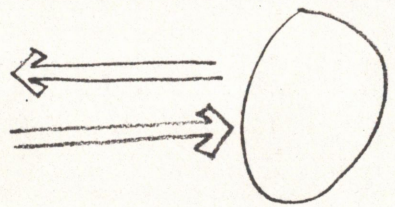
Throughout the history of railroad stations, two distinct groups of buildings have emerged: the station, and the terminal.

Terminal

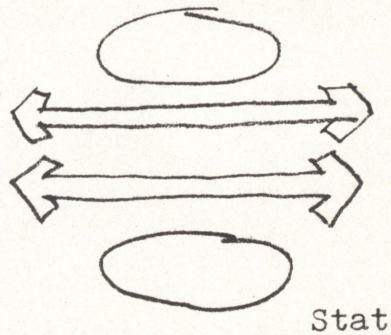
A terminal, or "head station" is a place where railway lines come to an end, or terminus. Facilities of this nature are well suited for lines that end at or start from a particular city. The British railway system, for example, consists of lines that all start from London. It is not possible to go through London on one of these trains, as all passenger rail facilities are terminals, and their tracks point outward from London.

Station

A station is simply a place where trains are stationary along a railway line. A variety of railway lines may converge on a station, but they will always leave in another direction. This building type is prevalent in smaller cities and towns. Calgary's existing VIA facility is a station and will remain so, unless a major railway relocation project should happen that would redirect passenger rail service. The Calgary Station is meant to be a stop between Winnipeg and Vancouver.



Terminal



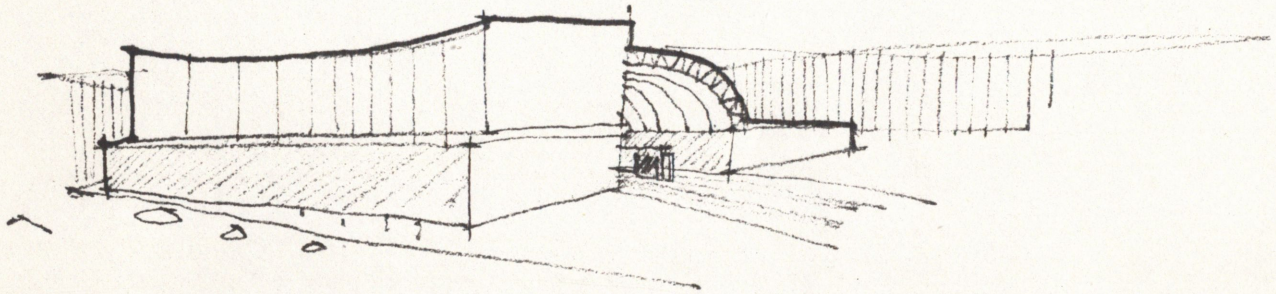
Station

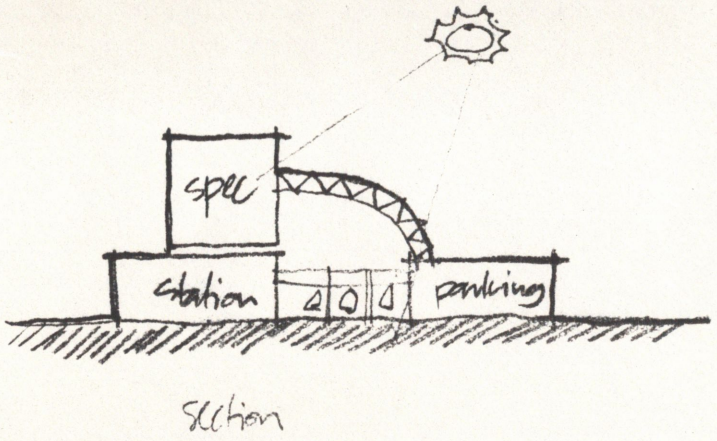
There are a variety of subtypes that have occurred, including building stations above tracks and building terminals in the same format as stations. Studies of these subtypes may be seen in Appendix D.

MASSING FORMATS

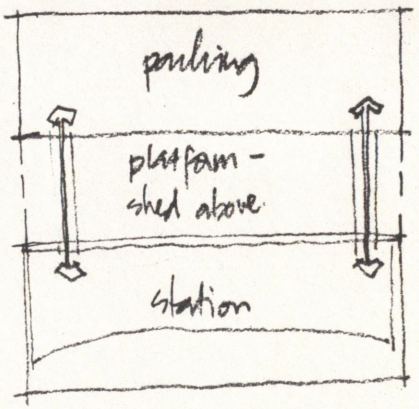
As a culmination of research up to this point in the design process, a series of quick diagrams were developed. Their purposes were to test preliminary concepts, to study site layout in a variety of schemes, and to study conceptual massing arrangements.

Study One





section



plan

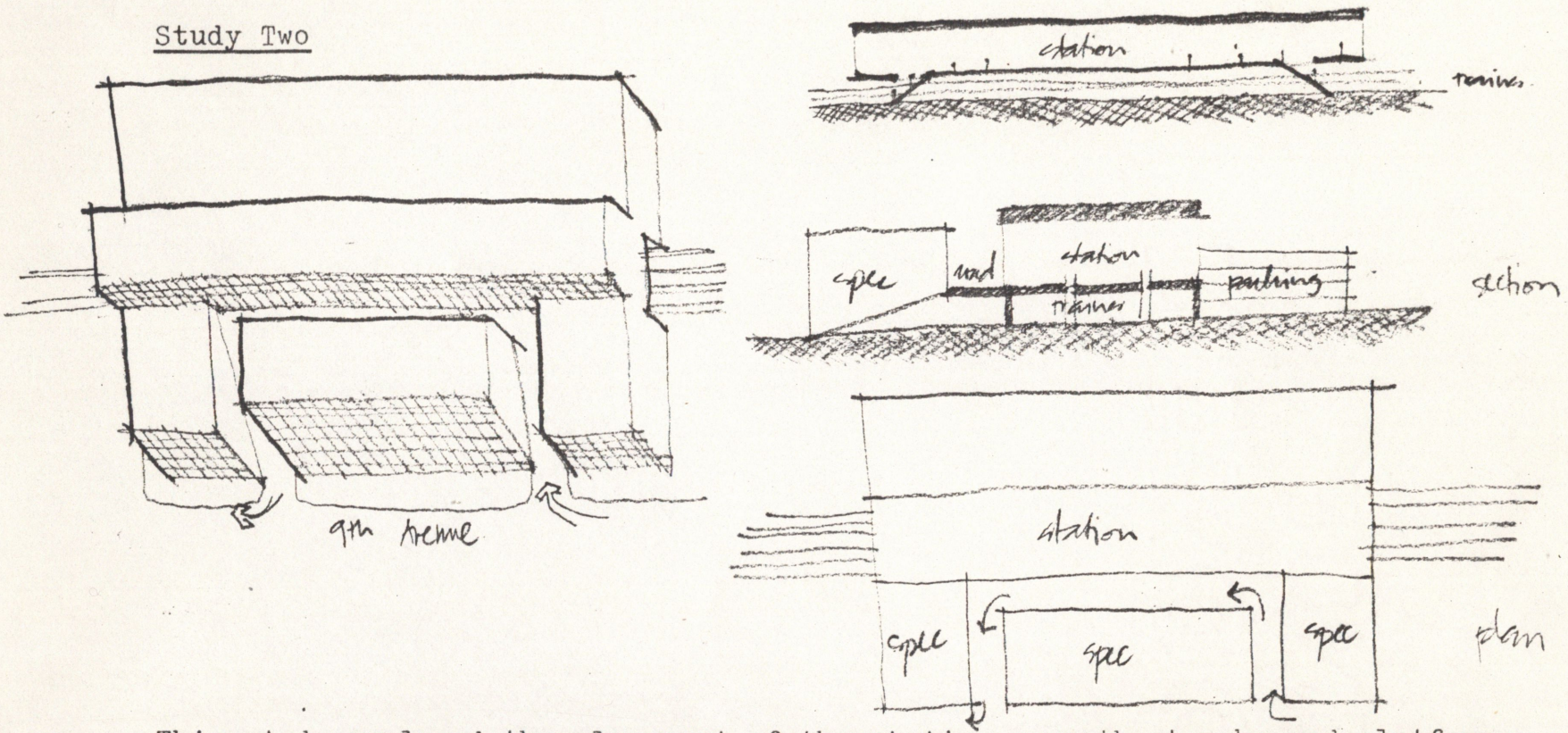
Study One (Continued)

Realizing that the chosen site is the only open part of the tracks between two dark and enclosed sections of track that are located under parking garages, the concept of a "light place" was studied. A place full of light along a dark section of track would reinforce concepts of entry and arrival.

A station would be placed beside the tracks on Ninth Avenue, with the Tenth Avenue side of the site reserved for a parking garage. Pedestrian access to trains would happen from overhead bridges, which would allow passengers to enjoy sunlight, observe the workings of the trains, and perhaps see parts of Calgary.

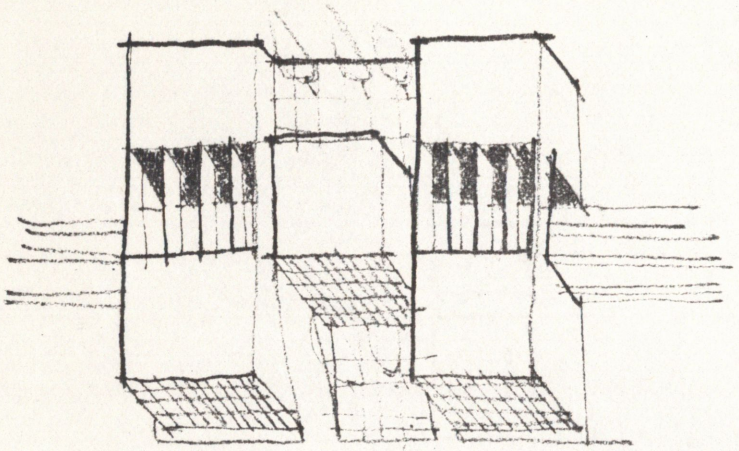
If any additional space were to be built with the station, it would occur above the station proper, facing Ninth Avenue. It would be different in massing to reinforce the identity of the station.

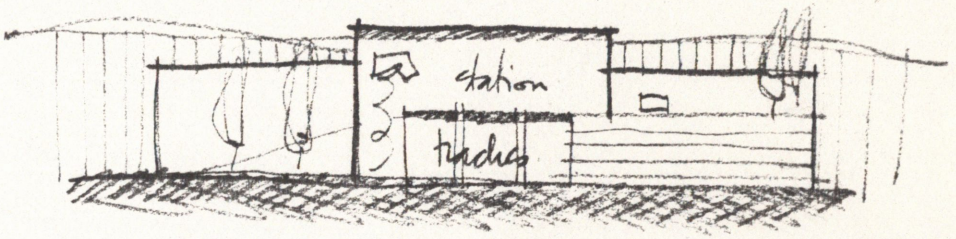
Study Two

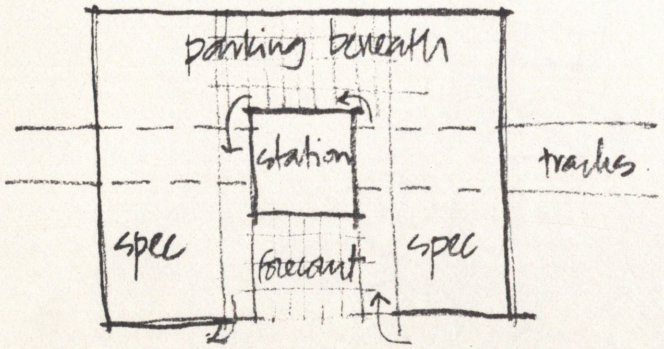


This study explored the placement of the station over the tracks and platform. To provide easy automobile and pedestrian access, a private road is built through the site to bring people up to the level of the station. Although this study may provide interest in its unusual station placement, the station lacks identity from the street and creates an anonymous space along the platform, resembling the quality of space under the existing parking structures. From a programming sense, the station space would be too large.

Study Three







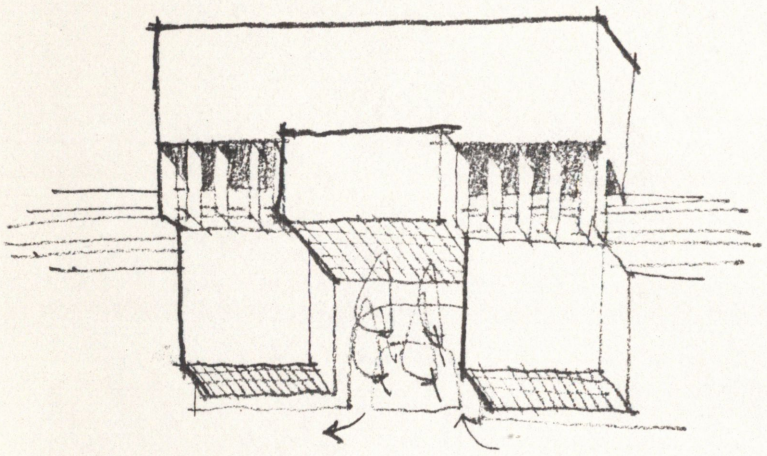
If Study Two is built along an east-west axis, Study Three is a similar study arranged on a north-south axis. This begins to study the idea of a forecourt in front of the station. Being that downtown Calgary appears as a very crowded city, this forecourt could become an identifiable place, and could be developed into a symbol for the station. Pedestrian traffic would enter through the forecourt.

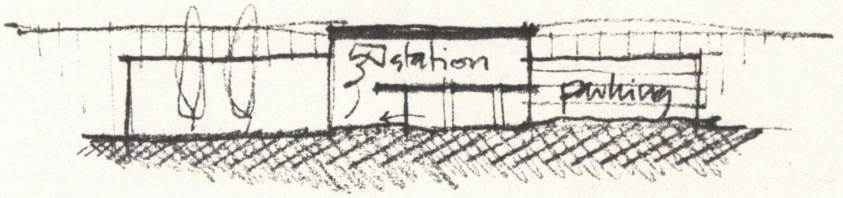
Automobile traffic would be directed up to the level of the station, where there is a large autocourt. This contacts the station on the south side, which would

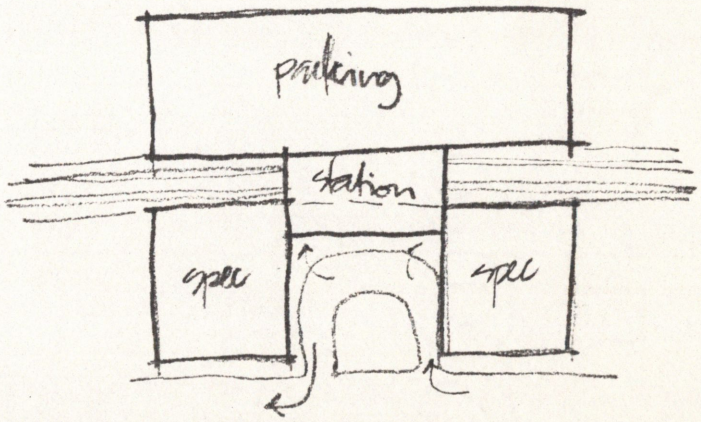
allow sunlight into the station. This may give a pleasant image for a visitor to associate with Calgary.

Traffic patterns within this format may be confusing, and could lead to automobiles dropping people off at the forecourt, bypassing the autocourt and similarly, people bypassing the station altogether.

Study Four

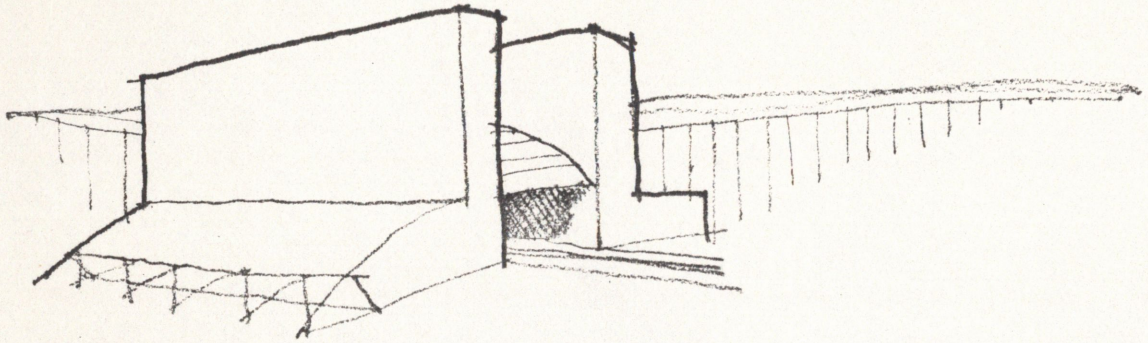


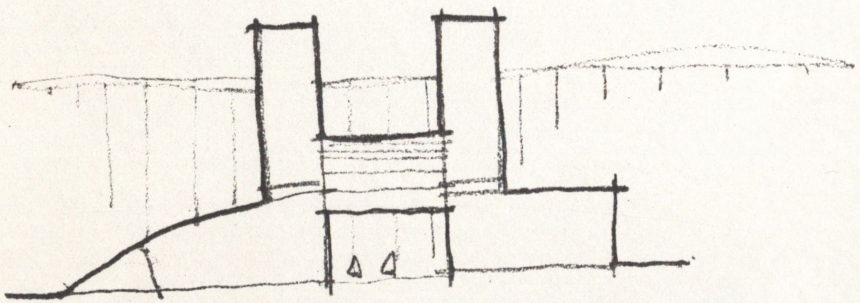


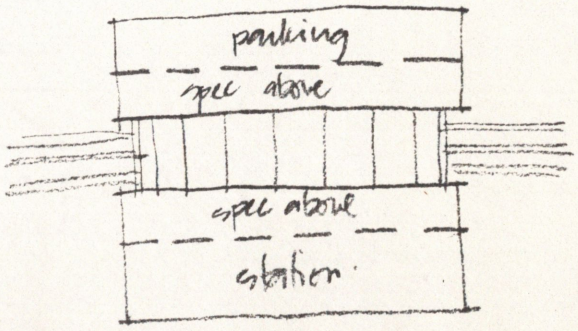


This is an adaptation of Study Three without the elevated roadway or autocourt. It is becoming apparent that traffic flows may be questionable in a scheme where the entire station is elevated. Although this may be appropriate for transcontinental passengers, passengers travelling on trains of short duration may not want much "ceremony", and may be much more content to enter and exit quickly.

Study Five





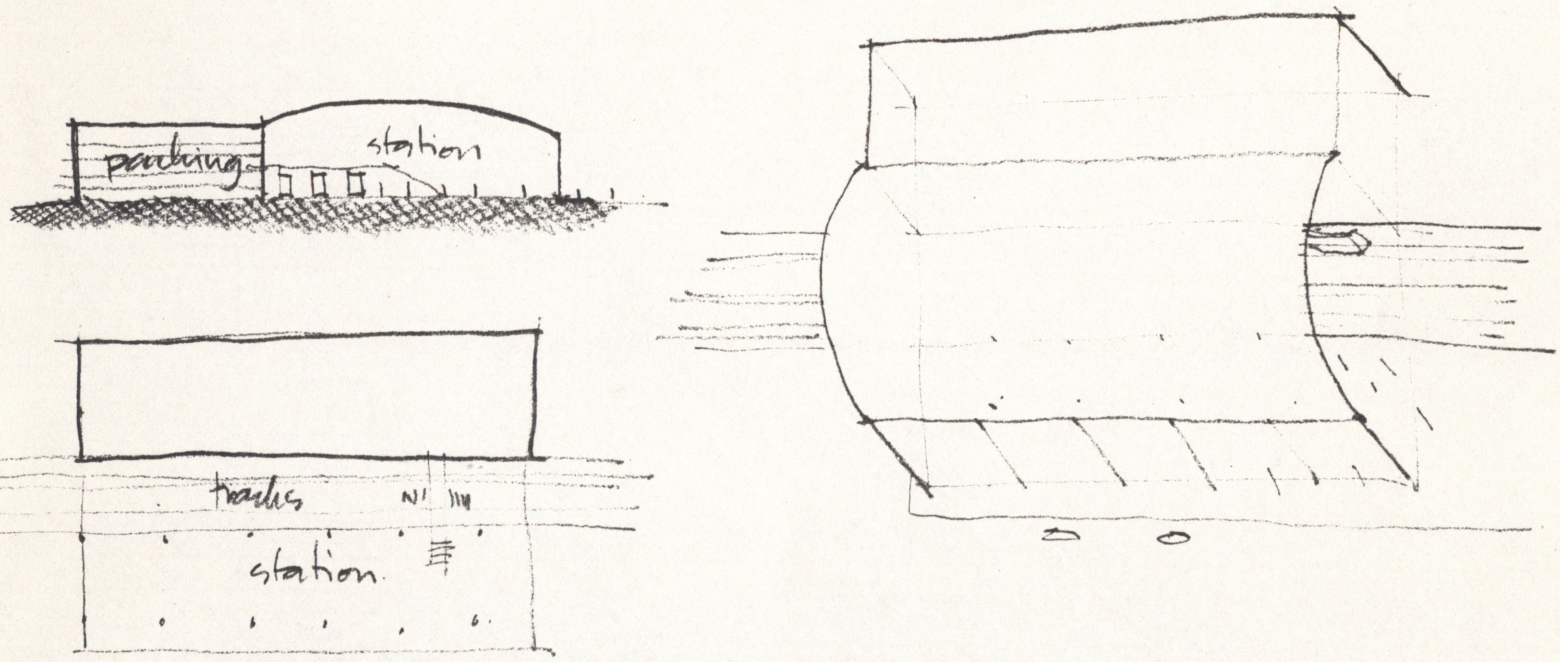


This study creates a "street wall" along the tracks, recognizing that the tracks are as much of a "street" as is a typical street with automobiles. This is accomplished by two vertical elements on either side of the tracks, much like a "Wall Street Canyon". These elements, in real life being speculative space, would be placed over the station and parking area.

This parti also gives rise to a new concept for covering the tracks, by spanning the structural members between the vertical elements. By doing this, it is possible to create the illusion of an enormous train shed, and with a minimal

amount of structure. The "arch" depicted in this sketch could "span" five hundred feet, with no structural member being longer than the width of the platform. The quality of space this illusion creates would be unmatched. Conceptually, an arch at this axis would express a stop - a form coming to an end, and coming to an end over the tracks. Meanwhile, an arch oriented across the tracks - as is typical - would simply express a line, without any movement or stoppage.

Study Six



This solution addresses the tracks, platform and station as one common, universal space. Although this may present many environmental problems, it has merit in that it creates a place from the tracks, provides a "hands - on" relationship between the trains and passengers, and provides a visual connection between the street and the trains.

Contextural Analysis

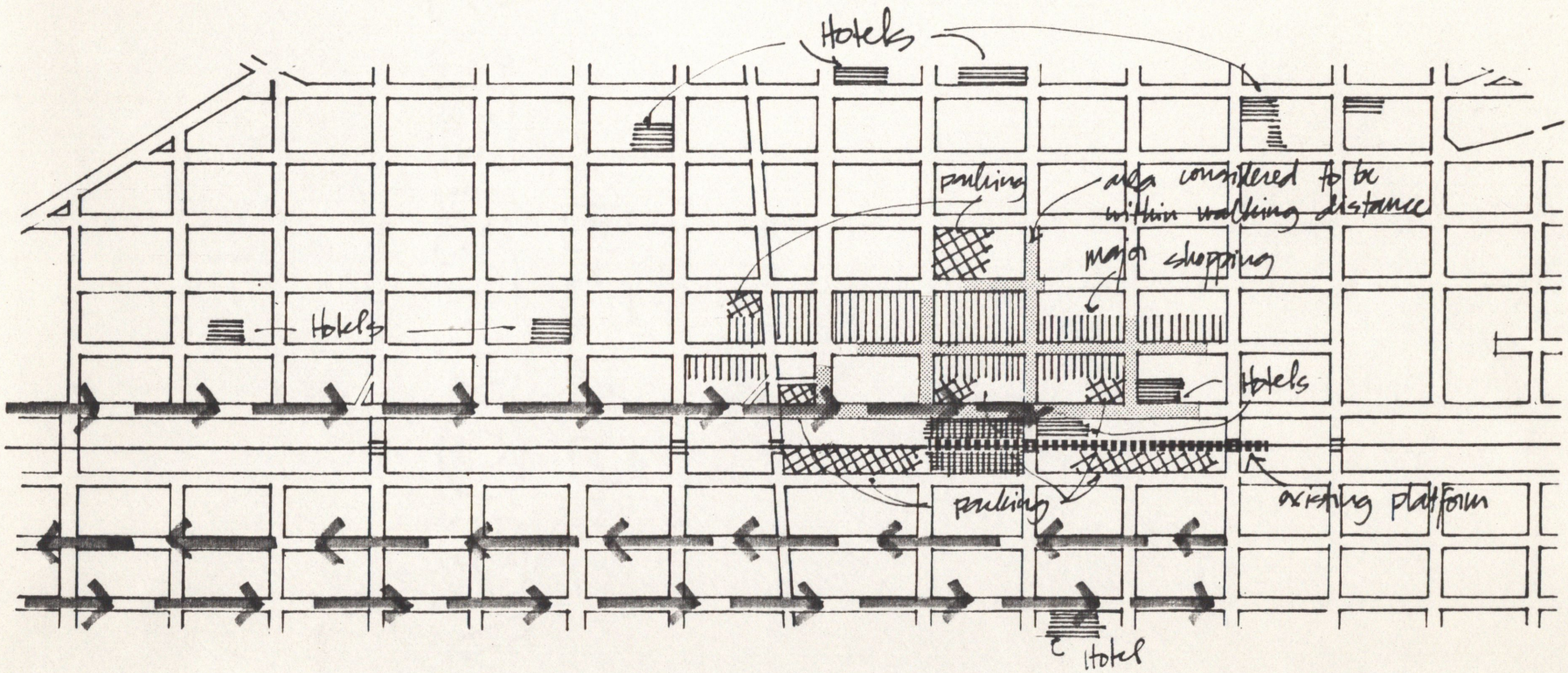


FIGURE TWO The immediate context and neighborhood of the Old Post Office Site

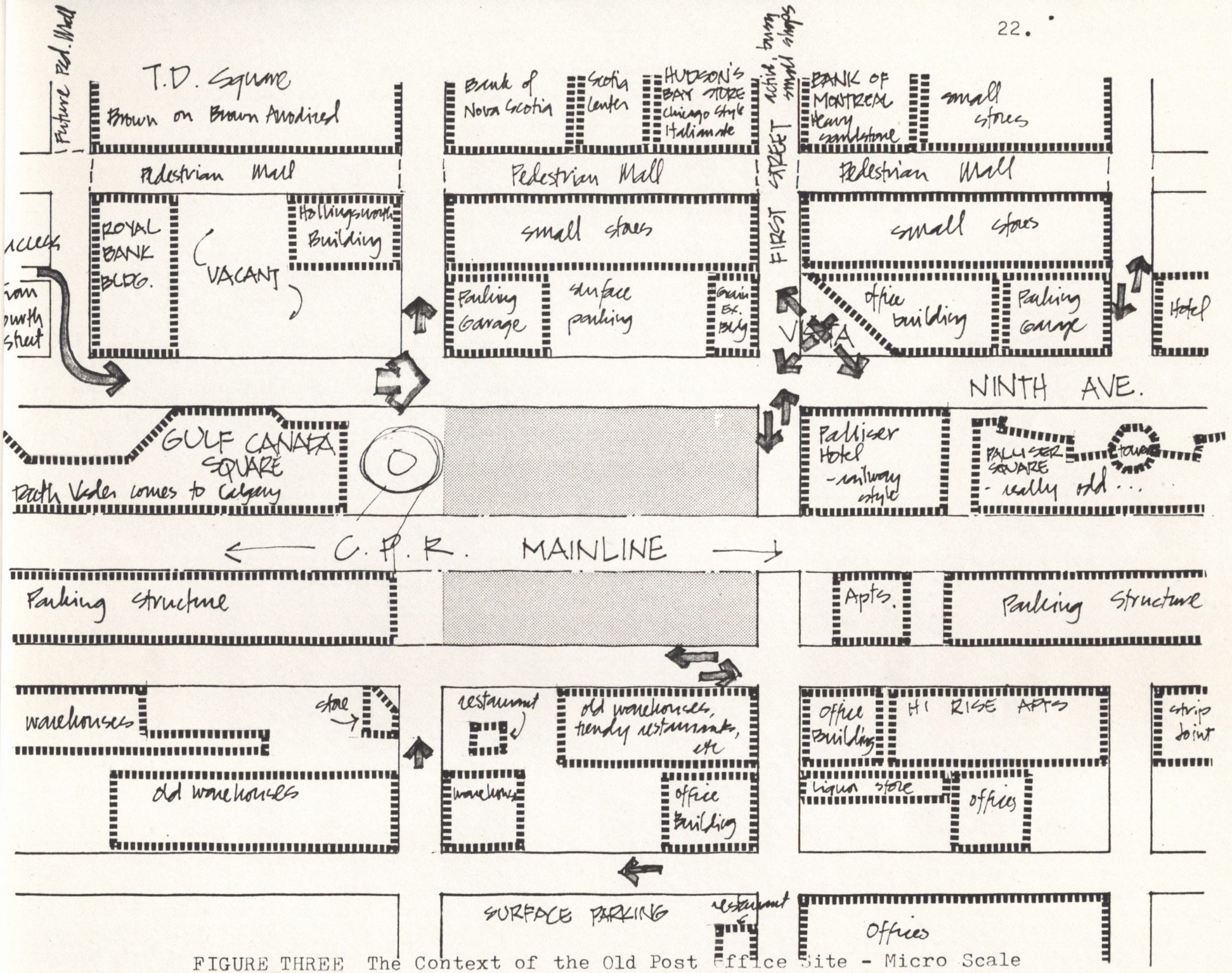


FIGURE THREE The Context of the Old Post Office Site - Micro Scale

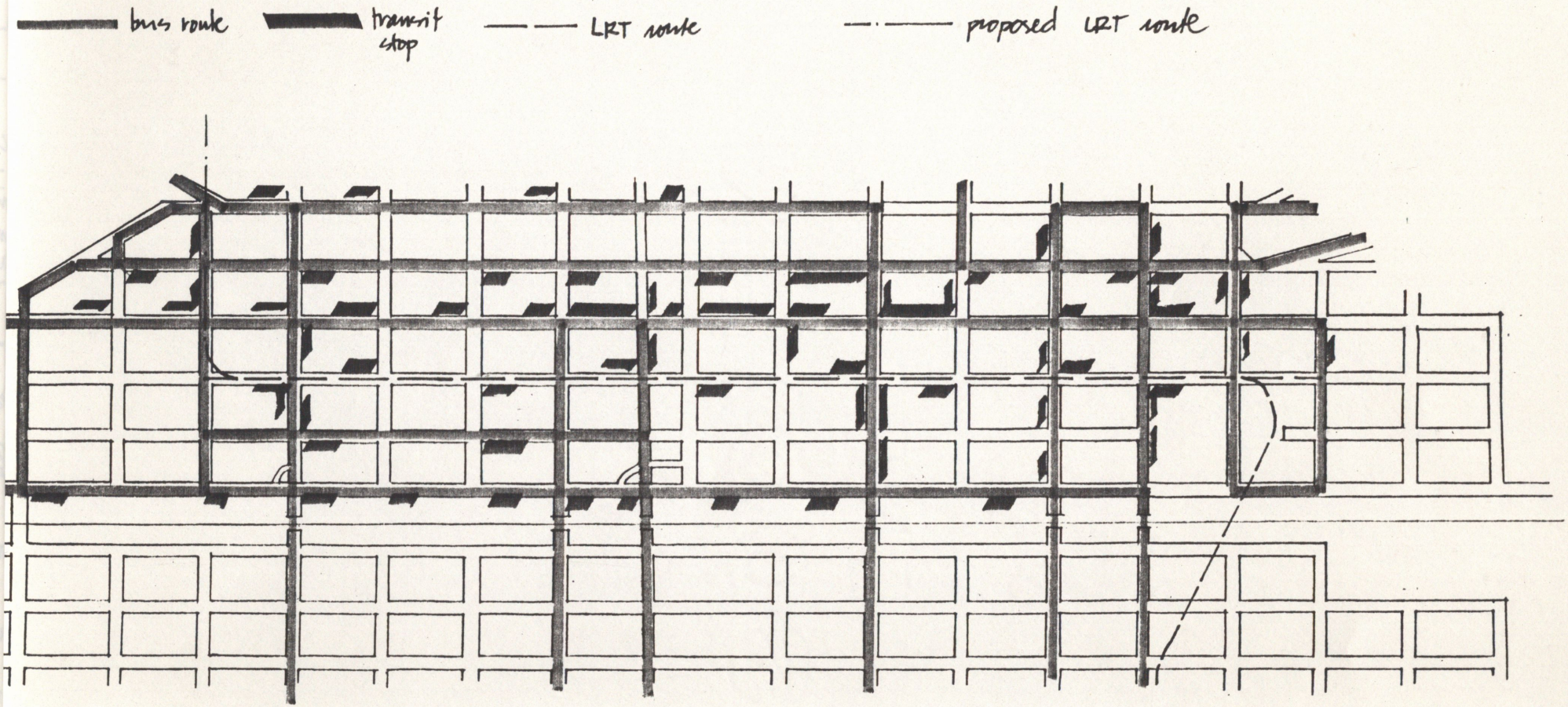


FIGURE FOUR Public Transportation routes as of June 1984

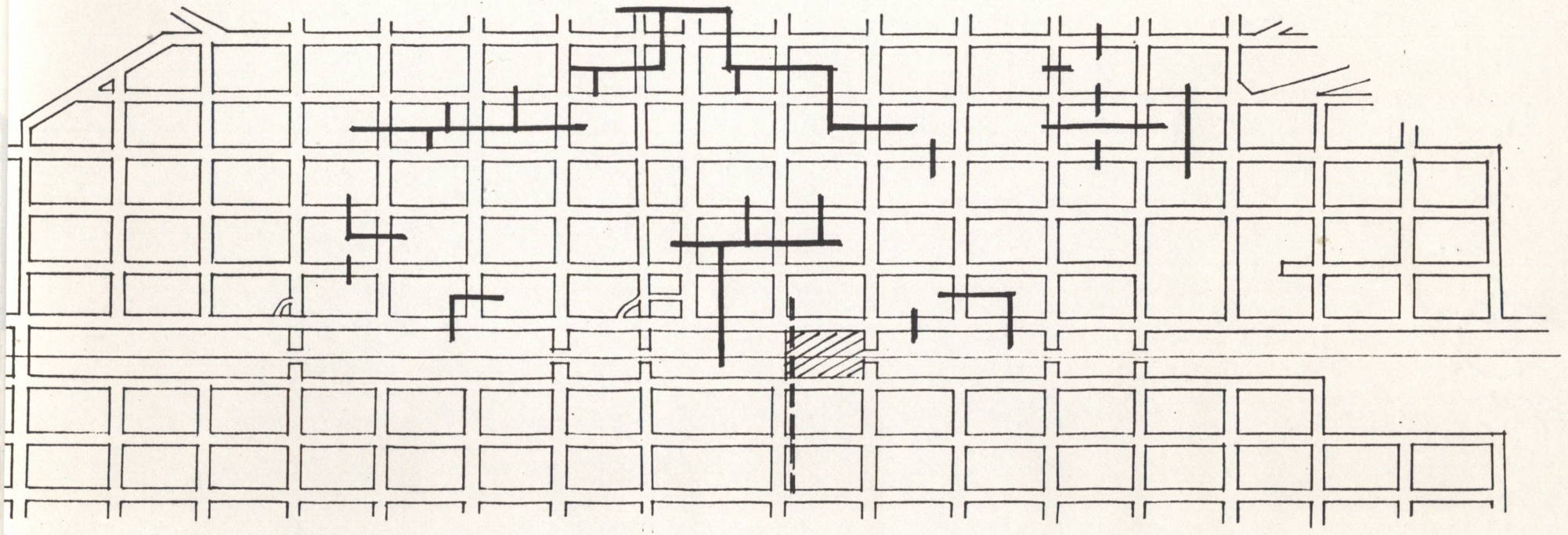


FIGURE FIVE The Plus Fifteen Walkway System of Downtown Calgary as of June 1984

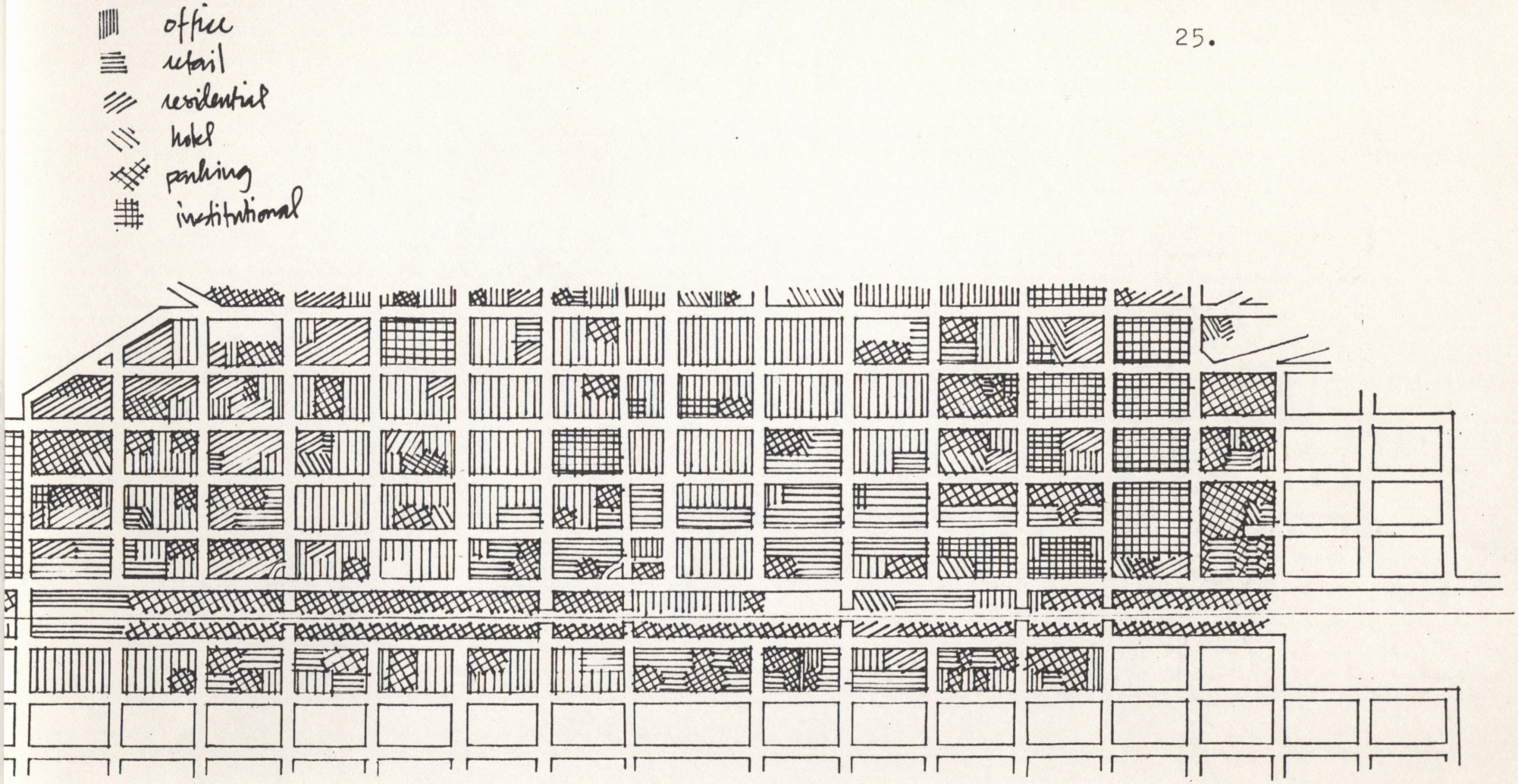


FIGURE SIX Land Uses of Downtown Calgary as of June 1984

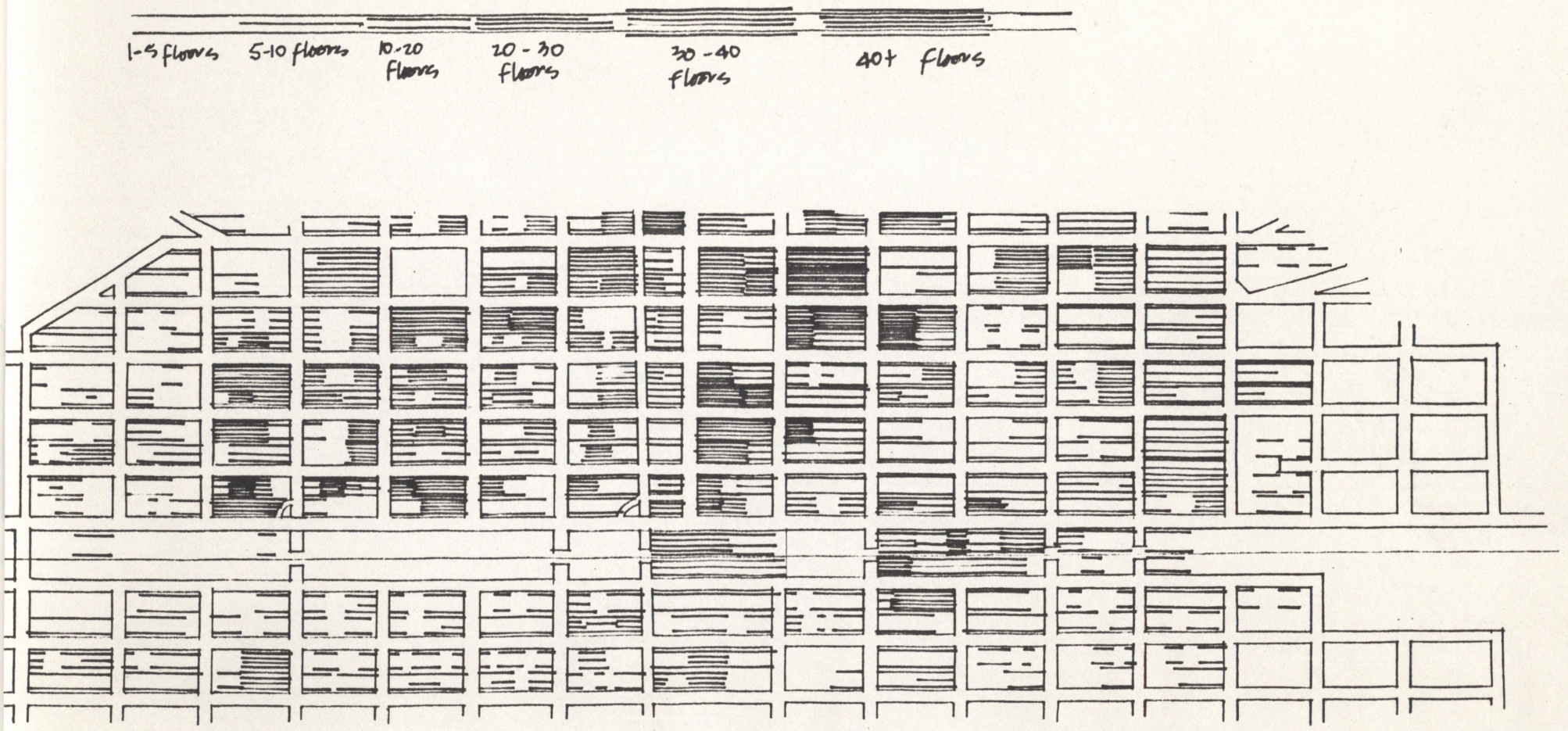


FIGURE SEVEN Building Heights in Downtown Calgary as of June 1984

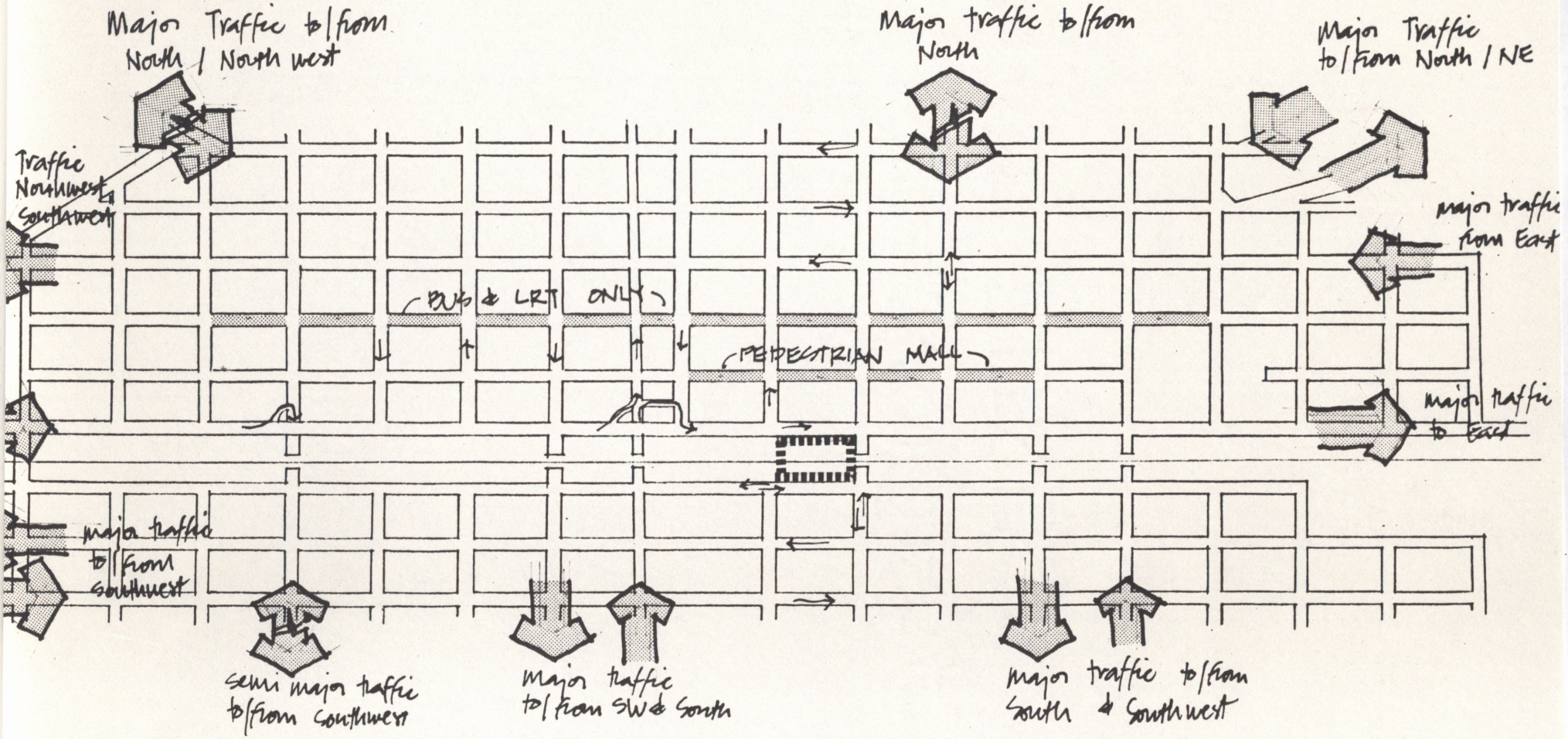
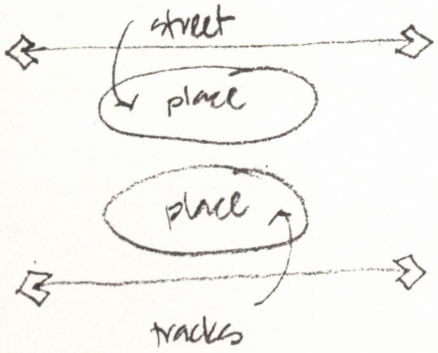
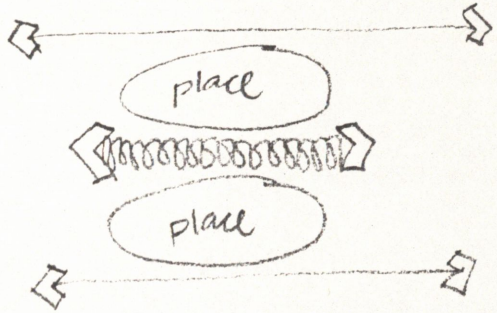


FIGURE EIGHT Vehicular Approaches to Downtown Calgary

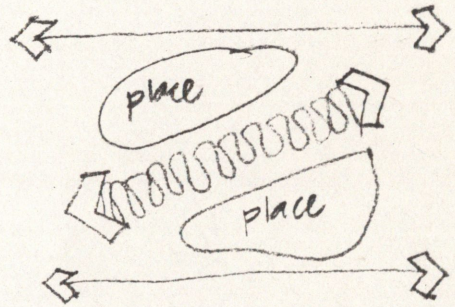
EVOLVEMENT - PLAN



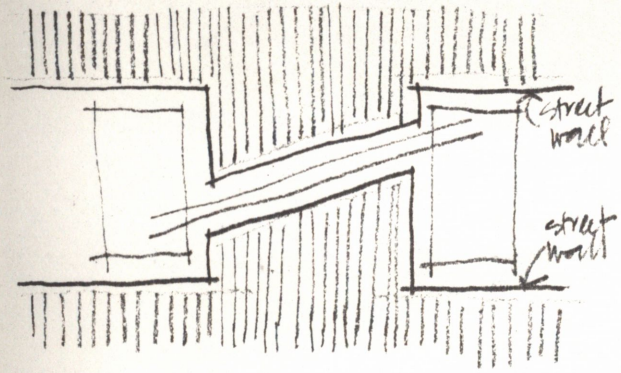
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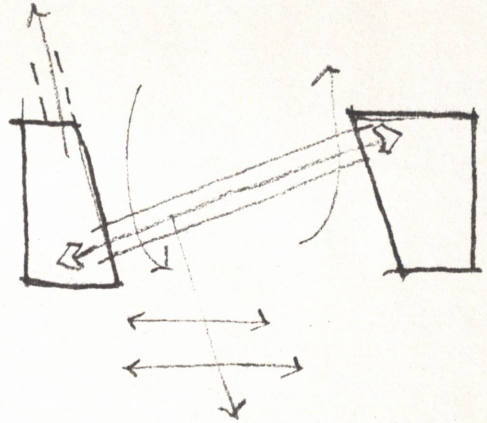
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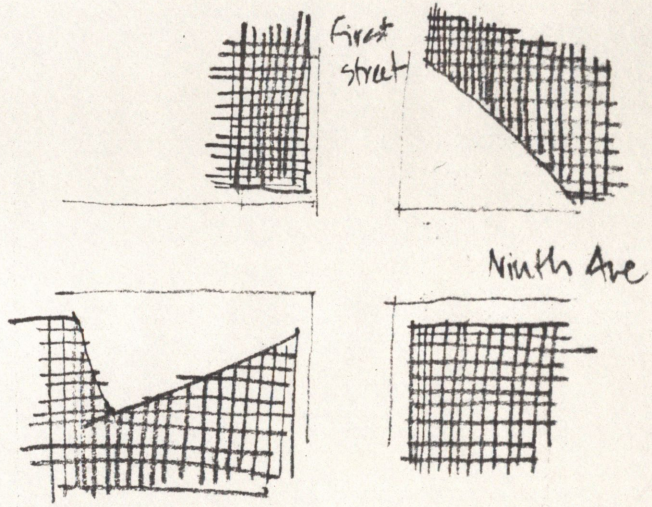
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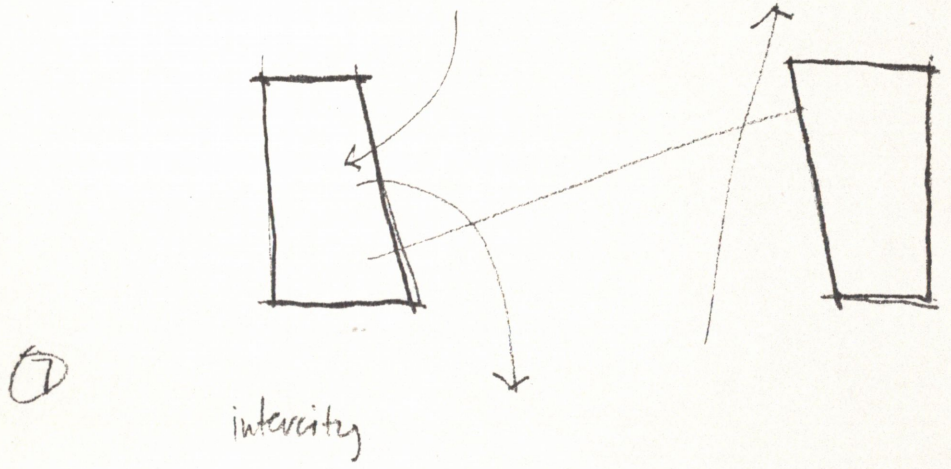
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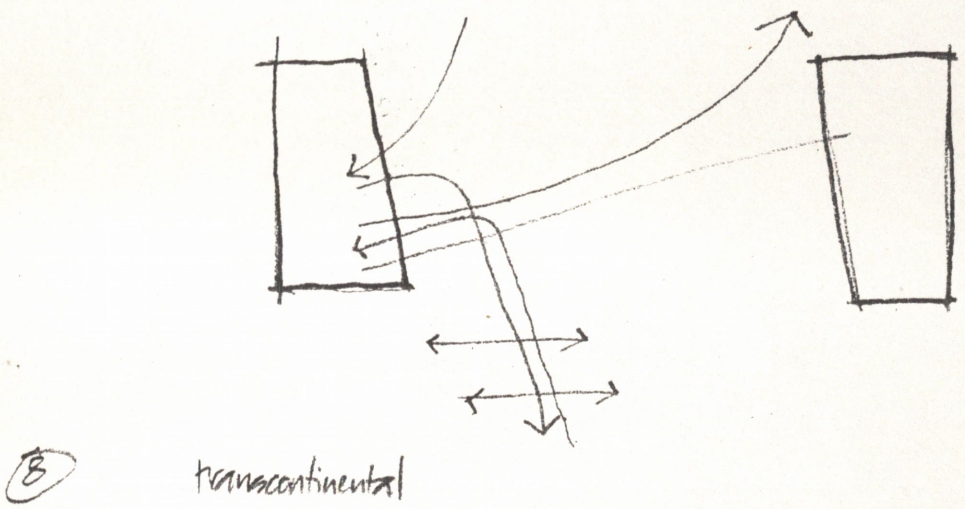


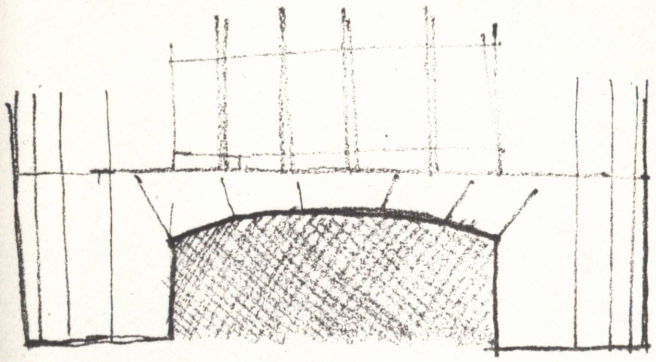
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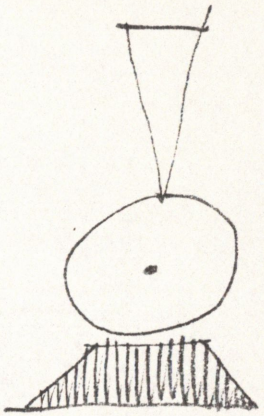
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intercity

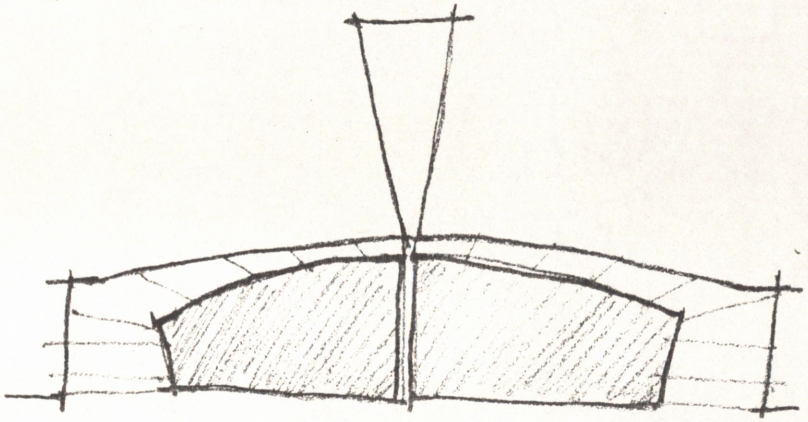

transcontinental



rly. station.



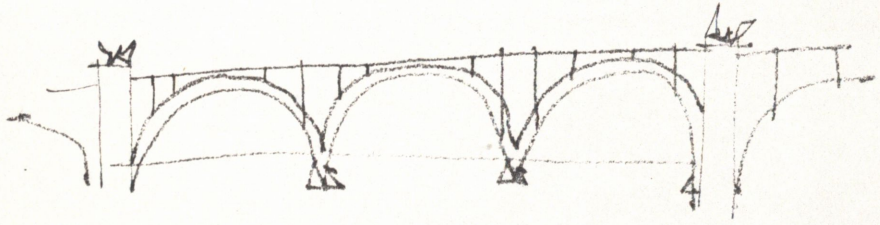
steam locomotive.



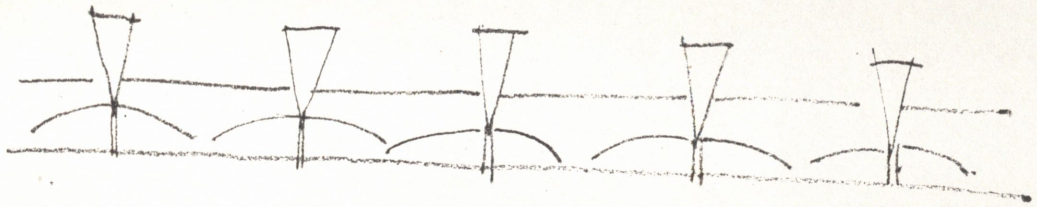
fusion

"bridge" concept

- RR station as transition between two places / methods



The Centre Street Bridge led to original station.



translation.

VIA Rail Canada Inc.

APPENDIX "A"

191 Broadway
8th floor
Winnipeg, Manitoba
R3C 3T8

VIA West

191 Broadway
8ième étage
Winnipeg, Manitoba
R3C 3T8

VIA Ouest

October 9, 1984

File: 1920-1

Mr. Darrel G. Babuk
Architectural Student
Montana State University
Thesis Studies
School of Architecture
Bozeman, Montana, USA 59715

Dear Mr. Babuk:

Please refer to your letter of September 28, 1984 to Mr. Herman Bogehold regarding your request for information on the Calgary Station.

Mr. Bogehold is away on vacation for several weeks and therefore to avoid a long delay in providing the information you have requested, I am replying to your letter.

Firstly I should like to point out that the station was built at a time when rail passenger service was on the decline and total elimination was the sign of the times. It is my understanding that the area now used as the station was in fact designed for intended use as a cocktail lounge.

Consequently the station is completely inadequate as a passenger rail terminal. The station is far too small, there are numerous stairs to be negotiated by passengers, vehicular access is poor and the station totally unsuitable for the handicapped.

Now to provide you specificially with the information you have requested.

- Projected passenger and greeters volumes on present type service up to 1990

- Arrivals	400 per day
- Greeters for arrivals	100 per day
- Departures	400 per day
- Greeters for departures	100 per day

- No split volumes on Transcontinental and Railiner service available

- Projections have not been made for possible high speed train service between Calgary and Edmonton after 1990

LENGTH OF TRAINS

- Maximum 20 cars on Transcontinental
- Railiner 1 car
- Car length 85 feet

The following activities take place at Calgary:

- Crew changes
- Railway operating crews - engineers, conductors

OFFICE SPACE REQUIRED

- Approximately 12' X 12'

BAGGAGE HANDLING

- To provide the best service it has been projected that the following space is required:

- Integration of baggage and ticketing	2,400 square feet
- Baggage storage	4,500 square feet
- Baggage pick up	1,800 square feet

why

TRAIN CAR STORAGE

- Presently 2 to 3 cars are stored

REFUELING

- Locomotives are fuelled and coaches watered.

TRAIN CLEANING

- Interior of coaches are lightly cleaned.

Food services loading/unloading and express freight loading/unloading does not take place at Calgary.

Unfortunately I cannot provide you with information on sanitary services loading/unloading as I do not understand what you mean by this activity.

32.

Hopefully this information will be helpful to you in preparing your thesis, and if you require further information, feel free to contact us.

Yours very truly,

Vic Mousseau

Vic Mousseau

For: H. Bogehold
Station Facilities Officer
VIA West
Winnipeg

tracks wkd

Upgrade Via Rail now

The importance of passenger rail service in Canada was given lip service by the previous federal government, and the service itself was given a raw deal which almost guaranteed failure.

It is hardly surprising that seven years after the formation of Via Rail in 1978 a report by the Canadian Transport Commission comes close to suggesting that the rail service is past due for retirement to a railroad museum.

Most of Via's rolling stock is outdated, unreliable and so creaky that it costs a fortune to keep running — even well behind time. Laughing stock is a more accurate description than rolling stock for many of its engines and passenger coaches. Canadian National and CP Rail, which now concentrate on lucrative freight business and lease system services to Via, have no particular incentive to give the passenger line good service. And they don't, according to the CTC report.

Passenger rail still provides an important transportation alternative for Canadians, a potential tourism asset, and in some places an essential service. It could be efficient and even profitable in high-traffic corridors if the service offered was modern and competitive. Even in areas where passenger rail service may never be economic in the bottom line sense, it can be justified as an important public utility in many parts of the country. That could be even more true in the future if fuel costs for road and air transport climb steeply, as they did in the 1970s.

The CTC report does not mince words about the present pathetic state of Via Rail.

"No other railway in the industrialized world entrusts its mainline service to a fleet of locomotives as old, outdated and obsolete as Via does; no other railway could afford to," the study says.

The government has the power to allocate the funds to build a modern passenger rail system. The money spent on maintaining the present relics on the rails would go a long way to equipping a modern service.

The CTC has the power to do whatever is necessary by way of regulation to clear the rails for a better deal for passengers and improved co-operation from CN and CP with Via, by incentive if necessary.

Pasenger rail service should be brought up to standard or put out of its misery once and for all. The former is the logical choice and the government and the CTC should get on with it now before the decay becomes irreversible.

From October 20, 1984
Calgary Herald. Page 5.

Spirit that built the West is lacking

The ancient dream about a high-speed train linking Calgary and Edmonton surfaced again this week.

The latest manifestation was greeted by the usual doubters and — bless their hearts — believers.

Via Rail investigators said such a link couldn't earn enough money to cover the cost of building it, although it could make a slight operating profit. The two cities are just too small to generate enough revenue to offset the $884 million construction costs, according to their report.



Lawrie Joslin

I prefer to travel with the provincial planner who, while conceding that building the line depends on the future growth of the two cities, insisted the proposed system has the potential to pay for itself totally.

That's more like the spirit on which the West was built.

The visionaries who conceived and built the trans-continental Canadian Pacific line will be revered forever in this country's history, regardless of opinions about the fairness of the rewards that were given the corporate entity in the name of which the feat was accomplished.

There were those who doubted the feasibility of the CPR plan before it was taken off the drawing board. But the visionaries of those days had faith that Canada would grow to be the great country it is.

Realization of the Calgary-Edmonton rail link will depend on a similar belief in the future of the two cities.

There's a Catch-22 element in all this. If the first trans-continental railroad had not been built when it was, Canada would not have achieved its present stature.

If a high-speed Calgary-Edmonton rail link is not built, the two cities may never achieve the full growth potential that could be realized with one.

The project ought to be decided on the findings of the investigators that 35 per cent of the people travelling between Calgary and Edmonton would use a high speed train. That compares with the one per cent that uses the existing service.

High-speed rail service obviously would be a useful addition. It might become an absolute necessity if the airport close to downtown Edmonton were ever closed to the airbus.

The study shows that a high-speed train could operate profitably. Why not accept that and finance construction from the Heritage Fund?

Money now flows from the Capital Projects Divison of the fund to build fixed assets, such as roads, that don't necessarily generate revenue.

Alberta Transport Minister Marvin Moore said a year ago that another $20 million would be needed from the Heritage Fund over the next two years to complete a $123-million road-building program in Kananaskis Country.

That is a worthwhile use of the money. The road system will be used by this and future generations of Albertans, not to mention countless hordes of tourists.

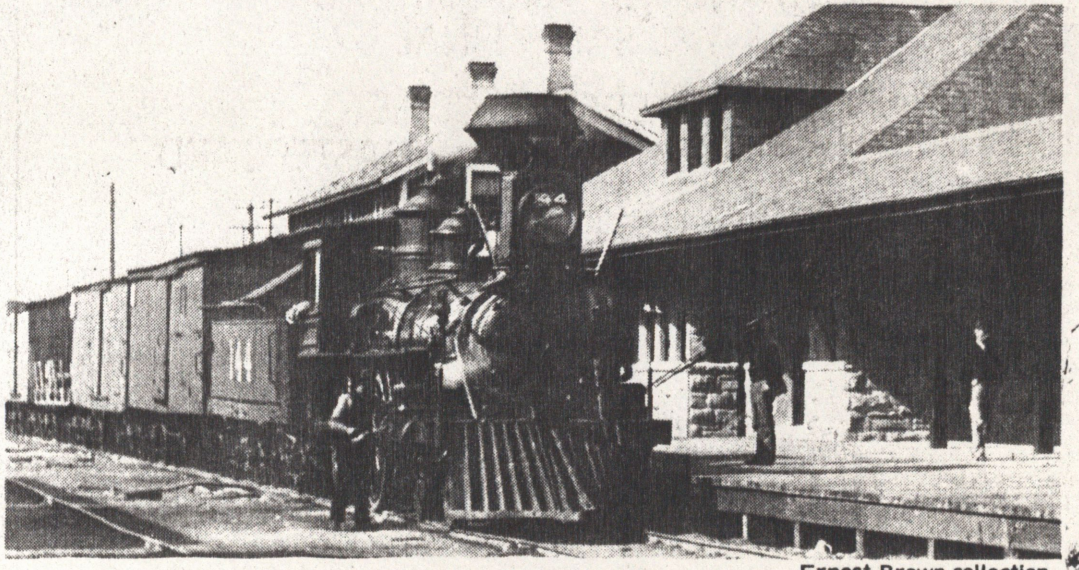
But the potential number of people who will utilize the Kananaskis roads is never likely match the numbers that would use a high-speed rail link between Calgary and Edmonton.

The same capital division of the fund had been tapped for $16.7 million by the end of the 1982-83 fiscal year to build airport terminals at small centres which, as of a year ago, were not being used to capacity.

Of course a much greater investment would be required for a high-speed rail line than has gone either to the Kananaskis roads or the small airport terminals. But the usefulness of the rail link is the overriding consideration.

If the principle of use can justify the smaller projects it certainly ought to justify the larger one.

If the Heritage Fund can usher one kind of dream into reality, it should also be used to transform another that is equally plausible.



Ernest Brown collection

The first passenger train reached Calgary in August, 1883

From August 24, 1985, Calgary Herald. Page 5.

Ridership Studies

VIA Rail's 1990 Projections:

Overall:

400 Passenger Arrivals/Day
400 Passenger Departures/Day
200 Greeters/Day

- No breakout of these numbers indicating passengers using Railiner or Transcontinental services were available. These projections are based on minor upgrades of the Calgary - Edmonton service.

Possible High Speed Train to/from Edmonton:

Present Conditions:

- 1% of all intercity traffice uses VIA Rail
- Total Existing Train Capacity: 140 persons/day/one way (based on a 70 seat Railiner travelling twice daily)

Assume 75% Load Factor on Railiners:

- 105 passengers/day/each way use train

Projected:

- 35% could use Intercity train service, according to Government report
- projected load: 3675 passengers/day/each way

Anticipated Growth:

- Both Calgary and Edmonton have been growing at an average rate of 3.5%/year, over the past twenty years, based on population.

Assuming 3.5% annual growth in traffic:

- by 1990 - 4500 passengers/day/each way by train
- by 2000 - 6370 passengers/day/each way by train

APPENDIX B

BUILDING PROGRAM

Passenger Services:	Departures:	
	Intercity Departures: 400 people at 20sq.ft./person	8000 sf.
	Transc. Departures: 260 people at 20sq.ft./person	5200 sf.
	General Departures: 185 people at 20sq.ft./person	3700 sf.
	Arrivals:	
	Intercity Arrivals: 280 people at 20sq.ft./person	5600 sf.
	Transc. Arrivals: 200 people at 20 sq. ft./person	4000 sf.
	Baggage:	
	Pickup and conveyor area:	1450 sf.
	Clerk:	110 sf.
	Passenger cart storage:	110 sf.
	Public Washrooms:	1350 sf.
	Food Services:	
	Snack Bar Food Preparation:	1280 sf.
	Snack Bar Seating: 150 people at 15sf/person	2250 sf.
	Restaurant Kitchen:	2550 sf.
	Restaurant seating: 200 people at 24sf./person	4800 sf.
	Loading Dock/Trash Removal:	1450 sf.
	Speculative Retail Space:	3700 sf.
	Parking: 1000 cars at 385 sf./car	385000 sf.
Total Passenger Services:		430550 sf.

BUILDING PROGRAM (Continued)

Employee Facilities:	Administrative:	
	Manager:	240 sf.
	Secretary and Reception:	240 sf.
	Dispatcher:	320 sf.
	Services:	
	Washrooms and Lockers:	780 sf.
	Employee Lounge:	275 sf.
	Train Crew Lounge & Check in:	340 sf.
	Sanitation:	
	Janitor's Closets:	500 sf.
Baggage Operations:	Baggage Sort and Cart Storage:	1900 sf.
	Transfer Storage:	260 sf.
	Office:	140 sf.
	Lost and Found:	400 sf.
Ticketing Operations:	Sales & Baggage Receiving:	440 sf.
	Clerks:	720 sf.
	Supervisor:	120 sf.
	Safe:	70 sf.
Total Employee Facilities, Baggage Operations and Ticketing:		6745 sf.
Total Passenger Services:		430550 sf.
+ 25% for Mechanical, Structure and Circulation.*		13075 sf.
TOTAL BUILDING AREA:		450370 sf.

* this figure does not include 385,000 sf. allocated for parking, as that number was intended to include mechanical systems, structure and circulation.

APPENDIX C

Site selection based on Railway lines shown in Figure one:

South Line: This line has excellent vehicular and public transit access to all parts of Calgary, except to the extreme north and northwest. Although this line straddles the LRT line, passenger trains have not run in this direction since the early 1970's. Track access to the CPR eastbound mainline and to the northbound Edmonton line is extremely difficult. This line would be an excellent choice for a suburban station if VIA Rail were to offer service to Lethbridge and other points south.

North Line: This line has excellent access to/from Edmonton and excellent access to/from Calgary's road system. At present, there is little public transportation service to the area, because it is sparsely populated or developed. Land usage is predominantly light industrial. Again, access is extremely difficult for trains heading to/from the CPR eastbound mainline.

West Line: There are few points of vehicular interaction possible with this line, because it is situated on a narrow strip of land between the Bow River and the valley escarpment. It is distant from the Edmonton line, which would result in increased operating costs for trains,

East Line: Again, this track is difficult for trains to use coming to/from Edmonton. This line is located in a heavy industrial neighborhood.

Crowchild/Mewata: Although this area has very good vehicular access to all points in the city, this may not be possible on many specific sites without building entrance/exit ramps from the already heavily conjested "Crowchild Maze". Little public transit serves this area, because there is no place to stop.

Downtown: This area has excellent access to all tracks. Calgary's road and transportation system is designed to get traffic into and out of downtown. There are many places in this area that would be traffic attractions/generators for a train station.

Footnotes

1. See letter from Mr. V. Mousseau of VIA Rail, Appendix A.
2. See Editorials from Calgary Herald, Appendix A.

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