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MAME OF AUTHOR/NOM DE L'AUTEUR FINAL VISUAL Presentation. Visual Communications Design
(Master of Visual Avis)
DEGREE FOR WHICH THESIS WAS PRESENTED / M.V.A Visual Communications Design
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DATED May 16 1975 0	

THE UNIVERSITY OF ALBERTA

Redesign of the Edmonton Transit Bus Map and Symbol as part of a consistant Corporate Identy System

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Marreen L. Missal

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF VISUAL ARTS

IN

VISUAL COMMUNICATIONS DESIGN
DEPARTMENT OF ART AND DESIGN

EDMONTON, ALBERTA
SPRING, 1975

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled:

Final Visual Presentation

submitted by MARREEN MISSAL

in partial fulfilment of the requirements for the degree of Master of Visual Arts in Visual Communication Design.

Supervisor

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Date: August 30, 1974

Externel Examiner

32 COLOUR SLIDES (35mm) TO BE USED WITH THIS THESIS ARE AVAILABLE FOR CONSULTATION AT THE:

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Photographic Slides

Record of development of research of redesign of city
Transit Map and of Symbol and Corporate Identity Items

Description of Aim and Redesign of City Transit Map

Aim .

Wherever a complex social society is found, complex visual communications are sure to be found also. Situations are constantly arising in which people must assimilate this graphically presented information. The direction of study was to investigate one area of concentrated information where it was necessary for the general public to translate the needed information when no authority on the subject was at hand. From the list of possible subjects; government taxation forms, immigration forms, university registration forms and public transit maps I chose the last item, for it had come to my attention that Edmonton's public transit map was a good example of bad communications. Also, this was a projectwhere I could establish an interchange of ideas and feedback with the transit company and duplicate the conditions of a designer-client situation. The items would not then be designed in complete isolation but as a hypothetical problem.

To organize the Edmonton Transit's route information into a form suitable for transmitting a concise communication, que must first be aware of the graphic possibilities that could be used. For this purpose a systematic analysis of public transit route maps was organized to study methods to aid improvement of clarity and visual organization.

Outline of Research Procedure

At the beginning of the 1973 winter term I wrote to forty major North American and European cities requesting examples of their public transit route map, I therefore selected cities that would enable me to compare and contrast the different approaches used I chose cities that would have:

the same basic technological and economical background:
 Canadian cities.

- 2. greater populations and areas American cities.
- 3. contrasting historical influence and street plans European cities.

From the replies received, I selected twenty-five of the transit maps for a comparison study of graphic methods for clarity and visual organization. The maps were analysed on these points:

- 1. Size of map
- 2. Type of city layout radial, cluster, ring, grid
- Style of graphically reproducing the street and ground plan
- 4. Style of graphically reproducing the route map if color or color/line coding was used
- 5. Method of locating destination and bus route
- Position of route numbers and directional signs outside or on the line
- 7. Location of city.

Three examples of the results of the systematic analysis:

St. John's:

- 1. 23" x 35"
- 2: radial, grid
- street plan represented by thick percentage black lines, colored water areas
- 4. color coded, each route with it's own color.
- 5. letter/number grid coordinates
- 6 route numbers outside the line, no directional signs
- 7. Newfoundland, Canada

Comments: The drawback on this map, of each route having it's own color, is that when they converge on the downtown area the routes tend to spread out over an area of four streets. While the buses are actually traveling on the main street only, some confusion is caused as to which street the bus is traveling on.

Manhatten:

- 1. 8" x 13"
- 2. grid
- 3. no street plan, water areas depicted same as land areas
- 4. route map color and line coded
- 5. letter/number grid coordinates
- 6. route numbers and directional signs outside of the line
- 7. New York, United States .

Comments: A good method of color/line coding is used on this map. Because of the number of buses traveling on Manhatten's streets, it would be impossible to assign each bus it's own color. One can take advantage of the grid street plan and code the buses with a small selection of colors and still avoid confusion.

Zurich:

- 1. 8" x 11"
- 2. radial, cluster
- 3. no street plan
- 4. route map abstracted, color/line coded:
 thick red lines trams
 thin red lines buses
 thin green lines suburban buses
 white area central Zurich
 yellow area suburban Zurich
- 5 no method of locating bus route and destination other , than visual search
 - for training to the formula of the formula
- 7. Switzerland, Europe

Comments: There is a good legend in four different languages. Because of the good use of coding, a lot of information is

presented in a very precise manner. The viewer can select the information he needs with no confusion.

Results of Research and Insights of Comparisons of Collected Maps

The systematic analysis of the public transit maps offered a selection of graphic tools to choose from to find a solution to Edmonton Transit's graphic organization problem. Each city places different demands upon the graphic presentation of the transit map. These demands include: number of buses, type of bus service, population distribution, street plan, and surface geography. Therefore, according to the demands, the solutions differ from city to city.

Results

- 1. Size of maps
 The sizes of the maps ranged from 8" x 8" to 34" x 36".
 The majority of the maps fell into the 18-22" x 23-27"
 size. Sizes of the maps did not relate to the size of the city;
 the main criteria for map size was whether it should be folded down to a convenient carrying size or not.
- Type of city layout

 The type of street plan and bus service can be advantageous to the design. In Manhatten, a grid street pattern city, the bus system was of the kind where the bus traveled down one street to it's destination and returned on the next street over. By applying four colors in a repetative sequence, the fifty-nine routes are plotted effectively. If two lines of the same color happen to run parallel, one line is broken. In Toronto, another grid pattern city, the buses for the majority, travel up and down one street only. Therefore, the buses that

run east/west are one color and the north/south bus routes are another. Cluster, ring and radial city layouts do not offer these advantages.

3. Style of graphically reproducing the street and ground plan. The street plan of a city is read easier when the streets are depicted as a single line rather than parallel lines. The parallel lines create a block pattern that can be confusing to the viewer. The single lines produce a definite street configuration and the information is not lost in a repetative pattern.

Over-crowding the map with secondary information i.e. marked open parkland, public buildings, institutional areas, other modes of transportation, etc. will interfere with the primary information of the map; the bus routes. The routes should be distinct from the other material by means of strong intense colors. Varied strengths of colors will aid the viewer in drawing his attention to the information in the proper order of importance.

- Style of graphically reproducing the route map, if color or color/line coding was used

 The majority of the bus maps were printed in one color throughout, or two colors; one for the street plan the other for the routes. Large cities like London, use one color because it would be impossible to code 375 buses.

 Cities with a combination of services, buses and trams, used two colors to differentiate between the two. These are some examples of color coding used by some cities:
 - 4.1 Birmingham radial street plan
 - a. 94 bus routes
 - b. 4 colors
 - c. red city and cross city services

blue - circle services yellow - intersuburban services green - night services

- 4.2 Manhatten grid street plan
 - a. 59 bus reutes
 - b: 4 colors
 - c. applied the four cofors in a repetative sequence to routes and used the same sequence of colors for the traffic running east/west, and north/south, if two lines of the same color happened to run parallel one of the lines were broken.
- 4.3 Toronto radial and grid street plan
 - a. 47 bus routes
 - b. 2 colors
 - c. black north/south routes red east/west routes .
- 4.4 St. John's radial and grid street plan
 - a. 13 bus routes
 - b. 13 colors
 - one color for each route; too many colors result in confusion when most or all of them meet in a small congested area.
- 4.5 Burlington grid street plan
 - a. 4 bus routes
 - b. 4 colors
 - c. one color for each route
- Method of locating destination and bus route
 Fifty percent of the route maps did not use any method of locating the destination and the bus route, while the

remainder, except one, used the letter/number grid coordinate method. One radial city's map had the route numbers within large dots placed on the outer edges of the city at the extreme end of the route's run. With a quick scan of the map one could locate any bus in question.

6. Position of route numbers and directional signs
The labeling of the routes in all cases was either the combinations of the two positions; on or off the route line, or none at all. London coded it's labels to indicate different types of service; black labels - regular service, blue labels - night service, red labels - a different bus system.

Further Observations

There were very few good complete legends supplied.

An enlarged insert of the central business district where there was dense bus traffic, was used by the majority of the cities.

This placed the information on a more functional scale.

Points of interest were expressed by simple dots, abstract symbols; or literal representations reflecting the nature of the attraction: an elephant for zoos, a harp for concert halls.

There were two methods of construction used for the maps: sheet form and booklet form. The sheet form offered one large route map with all the routes combined, whereas the booklet form offered individual route maps as well as the combined route map. A disadvantage of only individual route maps is that a route's placement in relation to another route and to the rest of the city cannot be seen.

Maps for rapid transit have the advantage over maps for bus systems of not having to follow the existing street plan. Literal geography can be sacrificed to clarity by including only important surface

delineations. Information can be organized on a 45 degree and 90 degree grid as long as the stations and interchanges are in the correct sequence.

Steps in Redesign of Map

The first step in redesigning the Edmonton Transit route map was to study the current map and decide what information was to be communicated and at what level of importance. Upon deciding this the development of the map proceeded in this manner.

- 1. The current 1973 transit map used one color (red) for all of the bus routes. Color coding is an effective method of differentiating bus routes but because of the large number of routes on Edmonton's streets it was impossible to code each one separatly. Therefore the existing system of bus identification was used to limit the amount amount of colors applied but still allow for effective communication. The buses are alphanumerically labeled according to which section of the city they service, and a color was assigned to each division.
- 2. Each route in a large area of dense bus traffic of the downtown area was individually plotted with directional signs and with it's proper color code.
- 3. The 1973 bus map used five different diagrams with inconsistant color codes to explain the bus traffic on the central business district area. There was no distinct relationship between the routes themselves and no indication on the large map the area it refered to. To correct this situation, all the bus routes for the downtown area were plotted on one map, with the intention that there would be a direct relationship between the diagram and the place from which it was taken on the finished map.

There was a considerable amount of shifting to find a compatible arrangement for the thirty-eight different buses servicing the small area of 4 x 6 city blocks. Once the downtown day routes were plotted, the most important factor was to design effective route labels and directional signs that would be distinct when read on a small scale.

- The 1973 bus map represented the street plan of Edmonton as parallel black lines, indicating the perimeters of the streets, consquently displaying the city block pattern more prominently than the streets. This was remedied by using single lines to indicate the street configuration, and was a 50% printing of black to further reduce it's impact. Therefore the street plan was treated as secondary information and would not interfere with the important information of the routes.
- It is important to include the street plan of a city for the reasons that places of interest, public buildings and private addresses would be impossible to locate on a map where this information is not supplied. There would be no indication if the route to your destination would be a straightforward grid, a maze of winding roads or would be interrupted by a ravine or a mountain. Choosing a route to your convenience would prove difficult.
- 5. The redesigned map retained the 17" x 22" size used by the 1973 map for it folds to a suitable envelope size for mailing, the folded map comfortably fits a handbag or pocket and it would not be too large to spread out to look at on the street.
- 6. The color coded routes for the rest of the city were then plotted on the street plan. Locations for route labels, directional signs and street identifications were chosen. A bold typeface for the route labels and a medium typeface for the street identifications

were used to express difference. By using a larger type size than previously used the number of labels needed was reduced. The larger labels on the redesigned map were easier to find then the smaller more numerous labels on the 1973 map. Because of Edmonton's sequential numbering system used for street identification it is possible to use fewer labels and still be able to pinpoint exact locations.

- 7. The 1973 map indicated the places of interest as a black dot using letter/number grid coordinates to locate them. Whereas the 1974 map (not previously used because it had not been distributed yet) indicated the places of interest as graphic representations of an actual object or place. They were printed in the same red as the street plan with no method of locating them. The places of interest for the redesigned map were divided into six areas and were color coded. The letter/number grid coordinate system was retained. Color coding the interest spots would facilitate identification when more than one dot was in the same reference area.
- 8. The final stage of the design for this side of the map was the layout of the copy, legend and symbol arrangement.
- On the reverse side of the map, detailed information of each bus route was supplied, a listing of bus zones, addresses for the places of interest, and where to buy bus passes were layed out on a grid that avoided the folds of the map. The map would fold to a 3.3/4" $\times 8.1/2$ " size with a front and back cover designed with strongly colored arrows pointing in four directions representing the route map on the inside.

Considerations of Ongoing Work and Reasons for Various Changes

The downtown day routes diagram which presented the bus

information for the central business district was originally intended to be 8" x 8" on the reverse side of the map. Midway through the project closer study of the actual use of the map made it apparent that this position would cause numerous flippings of the map for the diagram would be in a poor place for direct reference. It was decided to place the diagram on the map side to eliminate the turning over and so there would be an obvious connection between the routes leading off the perimeters of the insert to were the routes were picked up again on the large map. This move demanded a change in scale from 8" x 8" to 4" x 4" to fit the diagram in the only available space. The change in scale led to a redesign of the dimentions, the configuration of the routes and the route and directional labels which had to be read on a smaller scale.

Also, a grid of pale gray lines was superimposed on the map rather than using only the outer boundry with ticks to indicate the path of the lines for the letter/number grid coordinate method of locating buses, destinations, and places of interest. This change made it easier to follow the marked off squares and the areas of reference were clearly indicated by borders.

Considerations of Final Results plus Possible Improvements

The complete map presented the bus route information clearly in a manner that was suitable to the message. But a few minor changes changes could be made. The lines expressing the bus routes could be thicker thereby giving a stronger image for the eye to follow. Also, the same colors were used for the codes for the bus lines and for the places of interest. To make a definite division between the two uses of the colors, the code for the places of interest should be replaced with an abstract symbol.

The map would be printed on a paper stock that will produce a strong clear image in the printing of the type and the reproduction

of the colors. This should be a coated paper of which the properties are greater surface smoothness, increased opacity and uniform ink receptivity leading to better printability. It also should have a good folding endurance to be able to withstand the maps numerous foldings and unfoldings. Because of the many fine lines to be reproduced the map) should be printed by offset lithography in order to produce the best effect.

Symbol and Corporate Identity Items

Why it was Necessary to Design a New Symbol

With a new method of graphically presenting the bus map information, the existing Edmonton Transit symbol did not coorespond in style. The redesigned map presents the route information in a systematic, organized manner suitable for quick comprehension. Whereas the existing symbol was lacking in the qualities that would translate from the abstract form to the concrete form of a transit company. The initials E.T.S. could stand for anything from an electrical company to a tin smith. What was needed was an abbreviation of Edmonton Transit, a symbolic representation independent of language that would cause impact, a strong impression and a direct translation to a transit company.

Considerations of Desirable Qualities of a Symbol for a City Transit System

The symbol for a city transit system should attempt to convey such qualities as movement, direction, transport etc. As it is a symbol, a thing that stands for or represents another thing, it should therefore be a visual representation of the verbal information. It should cause impact, be observed and quickly recognized, as in the situation of the symbol on a moving vehicle and the viewer static, and of the symbol being stationary and the viewer driving past. The symbol should be strong enough to be recognized at a distance so that the bus riders can easily identify the bus as one of the public transit service and not mistake it for another bus service or trucking company.

As the transit company grows, the symbol should be able to grow with it. It should be flexible enough to be adapted to the changes, as in Edmonton's case, it should be possible to be applied to rapid transit when it comes into being.

Why it was Necessary to Apply the Symbol to Samples and Situations

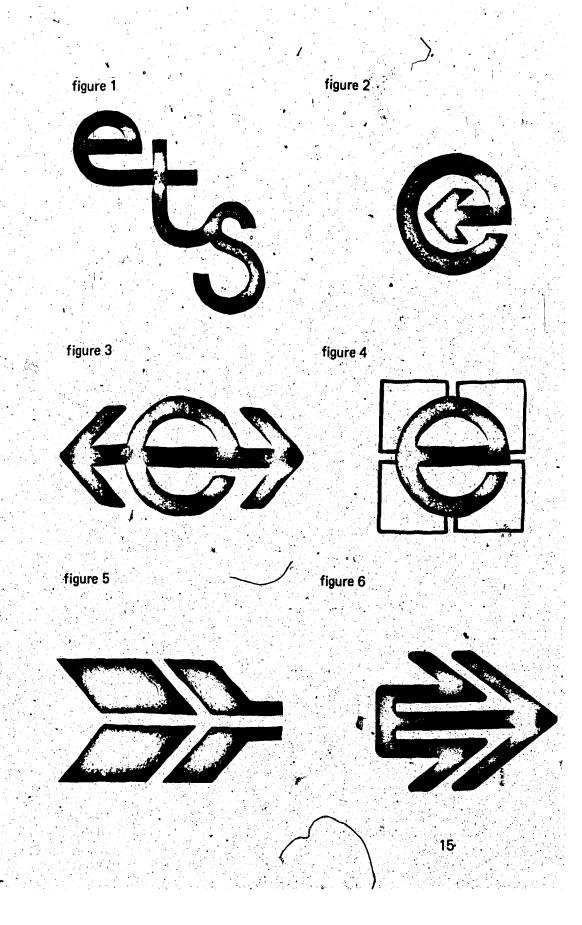
The symbol in most cases would not be seen in isolation; it would often appear with type in many different situations. It was therefore necessary to place the symbol in context to judge whether or not it would be harmonious with all the other material it would be placed with.

Steps in Design of the Symbol

The first ideas and sketches for the corporate mark for Edmonton Transit attempted to retain the initials E.T.S. It was soon apparent the results resembled contorted letter forms rather than a transit company's symbol. (figure 1) The next step was to discard the "T.S." and work mainly with the initial "E" for Edmonton; to establish a connection with it's being Edmonton's public transit, and an arrow to imply direction. (figure 2) Added to this was the introduction of two and then four arrows to imply Edmonton's buses would transport you to and from and in all directions from a central hub. (figures 3 and 4) A suitable solution was not achieved.

The symbol was then approached from the angle of an arrow, leaving the connection with Edmonton to the type. The resulting solution was a combination of a head of an arrow with the tail of an arrow. In this symbol both the positive and the negative areas were of equal importance. (figure 5) But when the symbol was applied to a bus the impression was that of an airline company and when applied to stationery, no harmony could be achieved between symbol and type. Because of these reasons this solution was discarded.

At this point the map had taken a definite form and a decision was made as to the qualities the symbol should consist of. The symbol was to communicate a transit company as clearly as the



map had stated the bus route information. These qualities were to be reflected in the symbol:

- Some visual reminder of Edmonton's connection; the letter E
- 2. An implication of direction
- 3. A suggestion of speed
- 4. The impression of a network of bus routes smoothly flowing into one another without confusion.
- 5. A closed loop situation.

A preliminary rough design was soon achieved that included all of the above considerations. (figure 6) The final design steps regarding the symbol were to turn a rough model into a complete stable design. These steps included considerations of: balance and weight of the positive areas in relation to the negative areas, mathematical constancy in dimensions and the radii of points, correct visual angle of the fins to imply speed and sufficient impact to recognize the letter "E" for Edmonton. The finished symbol was then applied to samples and situations.

Considerations of the Application of the Symbol

The symbol was applied to a selection of business stationery, individual bus route pamphlets, bus passes, a bus stop and a bus. These were the items chosen from the selection of business stationery:

- 1. envelope
- 2. writing paper
- 3. receipt
- 4. invoice
- 5. lost property notice
- 6. interdepartmental memo
- 7. stock requisition

- 8. phone memo
- 9. operators report of delay
- 10. application for leave of absence

There were three bus route pamphlets, six bus passes; three of the school passes and three of the monthly passes and a bus stop with three tabs indicating the buses that would stop at that point.

The stationery was arranged according to these guidlines:

- consistent placement of the symbol, name (Edmonton, Transit) and address
- 2. symbol and name to be printed in the blue that was
- selected as the corporate color and the remaining copy in black
- 3. same type style throughout
- headings identifying each piece of stationery in a prominent bold typeface and position
- 5. copy ranging and center with consistent placement
- 6. lines supplied for the places where information was to be filled in
- 7. choice of paper sizes that fevolved around a basic unit 8½ x 11.

The symbol was applied in the same manner to the individual tus route pamphlets, to the bus passes and to the bus stop. The bus passes attempted to deter counterfeit copies by using a different strong pure color for each month's school and monthly passes; a color that could not be reproduced easily by means of crayons. For this purpose also, a photographic reproduction of a common theme that changed monthly for each type of pass was also used.

The detachable tabs on the bottom of the bus stop were colored to coorespond to those used on the routes. The tabs also

indicated by means of a color coded bus symbol conditions of bus service:

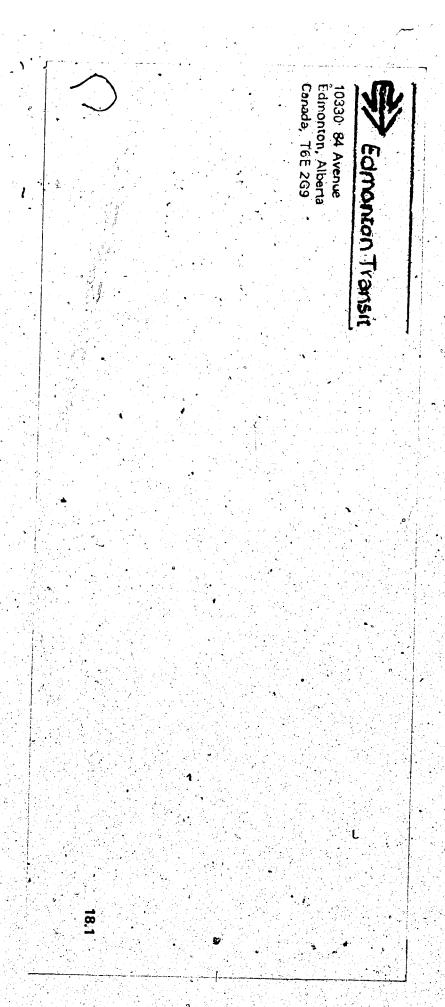
- black this bus travels the route all day until midnight or later (to whatever the time stated)
- 2. white this bus travels the route all day until 6:00 pm or 9:00 pm, whichever is stated
- 3. red this bus travels the route at peak hours only

The symbol was applied to the front of the profile of the bus and the name, Elemonton Transit was placed at the rear. There were some restrictions to the size and placement of the symbol due to the fact that a large percentage of the front part of the bus is givin over to advertising. The color arrangement of the bus would be the reverse of the stationery; a blue bus with a white symbol and name.

Considerations of Results and Possible Improvements and Extensions

Upon assesment of the results these reconsiderations were introduced:

- 1. Because of the repeated sameness of approach it was a difficult to tell the items (business stationery) apart. Therefore the stationery was divided into items for external and internal use. The address was retained for the former and since it was unecessary for the latter it was taken off.
- 2. To make the distinction between the classes of stationery definite the symbol and name of the external items (numbers 1 to 5 on the business stationery list) were to be printed in the corporate color and the symbol and name of the internal items (numbers 6 to 10) were to be printed in a percentage of that





The City of Edmonton

O.

10330 84 Avenue Edmontoli, Alberta Canada, 76E 2G9



The City of Edmonton

10330 84 Avenue Edmonton, Alberta Canada, T6E 269

receipt

Date:_

Received from: 15

amount.

Signed:

18.3



be City of Edmonton

10330 84 Avenue Edmonton, Alberta Canada, T6E 2G9

invoice

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The City of Edmonton

10339 84 Avenue Edmonton, Alberta Canada, T6E 2G9

lost property notice

Date:	
Name:	
Address:	
An article bearing your identification has been received t	
Lost Property Department. Please phone	
at your earliest convenience and arrange to pick up your	18.5
Please quote lost article no.	



interdepartmental memo

Datè:

α۲.

Subject:

From:



stock requisition

	그는 내가 있는 사람들이 살아 보는 사람들은 경기를 살려냈다. 나는		
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Edinanton Transit



operator's report of delay

Edmonton Transit

Dato:	
Route no:	Bus No:
Run noit	Direction;
-0uat on:	Time:
Cause of delay:	
A putes delayed:	Extra time claimed:
Shift no:	Shift off time:
Operator:	Badga no:
일본 하고 사람들 살아보고 된 병에 가지 않는데	



application for leave of absence

necety apply for leave of absence and/or annual vacation from:					
	Inclusive,				
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color. The remaining copy on the stationery that went to the public; the external items, would be printed in black, while the copy on the internal pieces would be printed in a darker blue than the symbol. This would eliminate the need for two separate printings for part of the stationery and thus reduce the costs.

- 3. The same type face was retained.
- 4 The identifying headings and the symbol were moved in an inch to allow for filing.
- 5. The copy that had ranged to the center line was shifted to the left. The copy all now ranged left along the same vertical line.
- 6. On pieces of stationery where the message was likely to be typewritten, i.e. the interdepartmental members the lines were ommitted and were retained on items where longhand would be used.
- 7. Paper sizes were retained.

The individual bus route pamphlets were not changed. The bus passes were changed because of the sameness of approach, for the bus driver would find it difficult to differentiate between the two. The school passes retained the original design while slight changes were made to the monthly passes. The format surrounding the photograph was changed from a square to a circle. The choice of geometric symbols could change from year to year. The copy was rearranged so that the bus driver could definitly see the changing month label. One color was applied to both the school and monthly passes; the school passes the solid color and the monthly passes would be a percentage of it. This way the bus driver would not be confronted with too many different colors; two a month, twenty-two for the whole year, instead he

would only have to remember the one color for the month and having only twelve colors to print would cut down on the costs.

The bus stop's arrangement with color was changed to that of the bus's; a white symbol on a blue background. The symbol was increased in size and the bus symbol code was changed to black and white to eliminate the confusion that could be caused by too many colors in two separate coding systems. The tabs colored to coorespond to the colors of the bus routes on the map were changed to a consistent blue on a white background. Before, there was a redundancy of information and this caused confusion.

The design arrangement and color of the bus was satisfactory.

This design solution could be extended to include all of the Edmonton Transit's business stationery, advertising, street furniture, vehicles and livery. Rapid transit could also use this identity system for public transit.

List of Photographic Slides

Slide

Description

- 1. Selection of Edmonton Transit stationary presently being, used
- 2. Selection of Edmonton Transit stationary presently being used
- 3. 1973 Edmonton Transit bus map
- 4. 1974 Edmonton Transit bus map
- 5. Close-up of 1973 E.T.S. map
- 6. Close-up of 1974 E.T.S. map
- 7. Close-up of redesigned map (slides 5, 6, and 7 are of the same center section of the city for comparison)
- 8. Preliminary design for Downtown Day Route diagram
- 9. Preliminary design for Downtown Day Route diagram
- 10. Preliminary design for Downtown Day Proute diagram
- 11. Preliminary design for Downtown Day-Route diagram
- 12. Close-up of slide 11
- 13. Preliminary layout of City Transit map
- 14. Preliminary layout of City Transit map
- 15. Preliminary layout of City Transit map
- 16. City Transit map redesign completed
- 17. Close-up of Downtown Day Route diagram
- 18. Placement of DDR diagram (gray block in the center of map)
- 19. Reverse of City Transit map redesigned
- 20. Cover of City Transit map, front and back to be folded
- 21. Layout of "Places of Interest" (reverse of City Transit map)
- 22. The redesigned transit symbol
- 23. Outline drawing of symbol
- 24. Symbol in black and in white
- 25. Symbol in chosen corporate colors, blue on white, white on blue
- 26. | Symbol applied to bus stop
- 27. Bus stop out of doors
- 28. Close-up of bus stop
- 29. Symbol applied to bus
- 30. Symbol applied to timetables
- 31. Enlargement of a timetable
- 32. Symbol applied to monthly and school bus passes

VITA

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