

The Process of Wayfinding

Rochester Institute of Technology
College of Imaging Arts and Sciences
School of Design
Graduate Graphic Design Program
MFA Candidate
JinHee Kwon

Approvals

Chief Advisor:

R. Roger Remington

Date:

5-8-2000

Associate Advisor:

Bruce Ian Meader

Date:

5-8-2000

Associate Advisor:

Charles F. Lewis

Date:

5-8-2000

Chairperson:

Nancy A. Ciolek

Date:

5.8.2000

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Signature

Date:

5.8.00

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for their support.

Thesis Committee Members

Chief Advisor

R. Roger Remington
Professor, Graphic Design

Office: 3404 Booth
Phone: 716.475.2658
E-mail: RRRFAD@rit.edu

Associate Advisor

Bruce Ian Meader
Associate Professor, Graphic Design

Office: 3420 Booth
Phone: 716.475.7826
E-mail: BIMFAA@rit.edu

Associate Advisor

Charles F. Lewis
Professor, Interior Design

Office: 4570 Booth
Phone: 716.475.6357
E-mail: CFLFAA@rit.edu

Definition	"Wayfinding is finding one's way to a destination: spatial problem-solving comprised of three interdependent processes: decision making, decision executing, and information processing." ¹
Necessity	We struggle to find our destination and every building or city is not always designed with wayfinding being a fundamental consideration at the beginning of a design project. Users need to be directed and informed through space by a wayfinding system. Moreover, a well-designed wayfinding system provides users with effective and necessary information, along with satisfying four basic and essential functions: direction, information, identification and regulation.
Goal	The principal goal of this thesis is to define the wayfinding system using theoretical approaches and to develop the process for signage design which means designing a system of signs. The concept of a wayfinding system derives from the combination of sign theory, information theory and systems theory. This thesis process will analyze the application of those theories to the design of signage in order to create a comprehensive wayfinding system.
Application	The design application for this thesis study will include the development of an interior signage system for Rochester Institute of Technology's National Technical Institute for the Deaf (NTID). Currently, the lack of signage in this building causes difficulty in getting to specific destinations, resulting in confusion and an inefficient use of time. The primary objective is to provide the NTID building with an effective wayfinding system.

¹ Paul Arthur and Romedi Passini, "Wayfinding: People, Signs, and Architecture"
(New York: McGraw-Hill, Inc., 1992)

Signage Guidelines and Standards for Monroe County Facilities (May 1997)

This signage project presented Monroe County's exterior and interior signage design in a comprehensive way. The project defined old signage issues of Monroe County, and suggested cohesive components of wayfinding. They built a standard for their signage system and identified a sequence of exterior and interior sign type. The goal of this project was to design consistent sign systems and to ensure good functional and technical application.

This *Signage GuideLines and Standards for Monroe Country Facilities* is a meaningful precedent for this thesis topic because it presents the standard for an inclusive signing system and emphasizes the wayfinding system.

Dutch Sign Design (1995)

This book includes the Netherlands Sign Design. These sign systems are well-organized and based on architectural factors. They consider the sign design as architectural or urban environmental design, and focus on informational and technological consideration.

Dutch Sign Design is a meaningful precedent for this thesis topic because the sign systems shown presents a systematic approach for designing systems which include clear directions, useful information through color-coding, distinct typography, and advanced technical methods. This systematic approach results in sign system designs that are functionally and aesthetically sound.

The Americans with Disabilities Act White Paper: SEG D's Clarification and Interpretation of the ADA Signage Requirements (Second Edition, April 1993)

The Society for Environmental Graphic Design(SEGD) developed the White Paper to support the Americans with Disabilities Act(ADA) and introduced a guideline and regulations for signage requirements. The requirements introduced constraints for location, position, and typography for signage. It guides designers from all disciplines, their customers, manufactures, and facility managers.

The *White Paper* is a meaningful precedent for this thesis topic because it presented current guidelines and regulations for current signage.

For research, there are three steps.

The first step is visiting the National Technical Institution for Deaf (NTID) building in order to determine navigational difficulties.

The second step is interviewing NTID faculty and staff in order to understand issues of current NTID signage system. The final step is surveying users in the NTID building.

The difficulty of wayfinding not only results from the complexity of the building but also a complicated space relationship. The result of poor wayfinding results in frustration and stress. For an effective wayfinding solution, functional efficiency and accessibility should be a reflection of the system.


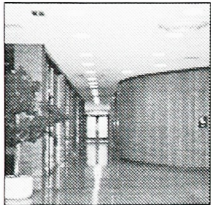
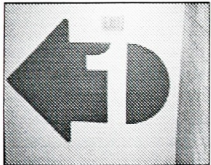
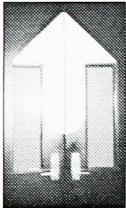



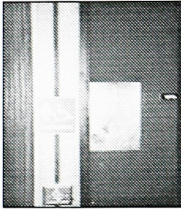






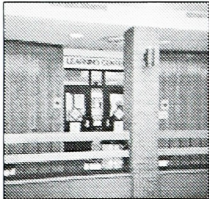



Visiting the National Technical Institute for Deaf (NTID) building

The first impression of the building is of confusion and complexity. In the building, a few signs exist, but for specific or detailed information, visitors use the Visitor's Center instead of using signs. The reason is that visitors rely on asking staff at the Visitor's Center. Many offices and classrooms are hidden throughout the building. There are two main entrances. One is connected from the first floor, and another is connected from the second floor for dormitory users. Therefore, without identification of each floor, users can become easily confused.

To assess the difficulty of wayfinding in the NTID building, pictures were taken to document problem areas.

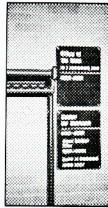
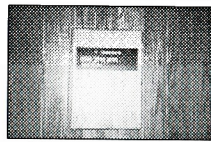
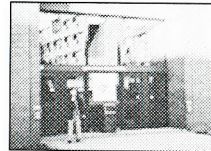
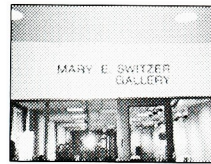
The matrix "The Inside of the NTID Building" shows a visual analysis of the interior of the NTID building. Moreover, this photo analysis defines the current situation of the NTID building.

The Inside of the NTID Building

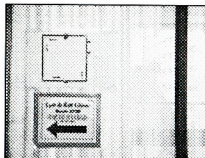
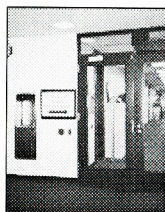
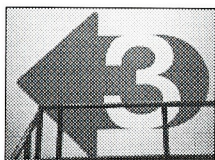
	Direction	Information	Identification	Regulation	Miscellanea
1	1st Floor	   	  	 	 
2	2nd Floor	  	 	 	

continued

2 2nd Floor



3 3rd Floor



Interviewing the NTID Faculty and Staff

Interviewing with the NTID faculty and staff was helpful to understand the difficulty of the present NTID signage system. First, a meeting with Cathy Chou(Instructor) provided initial information regarding current issues in the NTID building. According to her, the NTID building is a very complex structure and people easily get lost inside of the building. Continued renovation work in the NTID building causes further wayfinding problems. She referred me to Dean Woolever(NTID designer) and Al Smith(Director, Division of Institutional Services).

Dean Woolever suggested the current needs for the NTID building. Interchangeable sign design, which can be updated easily, would improve accuracy of information and is necessary for finding specific locations. For instance, 1st, 2nd and 3rd floors should have supporting information for identifying the proper location. He explained the hallway(corridor) identification difficulty because many offices are located in the hallway without guided sign system.

Finally, Al Smith, who manages the NTID sign system and interior parts, knows specific details and current issues of the building. According to him, the lack of a wayfinding system results from limited budget and time. He also mentioned that problems are exacerbated by the structure of the building. Currently, colored walls were used for distinguishing each section of the building, but during renovation, all walls were painted white. Therefore, the confusion is perpetuated. His concerns

included the need for directional signs, flexibility, readability for people with disabilities, color consistency for those with visual disabilities, and consideration for user groups, both newcomers and daily users.

About the National Technical Institute for the Deaf (NTID)

"NTID, one of the seven colleges of Rochester Institute of Technology(RIT), is the world's first and largest technological college for deaf students."(NTID mission 2000¹) The NTID provides specific education programs which are concentrated in arts and sciences curriculum to deaf students. Also, the NTID supports facilities and access services such as note-taking, and interpreting for deaf students who take a class at RIT.

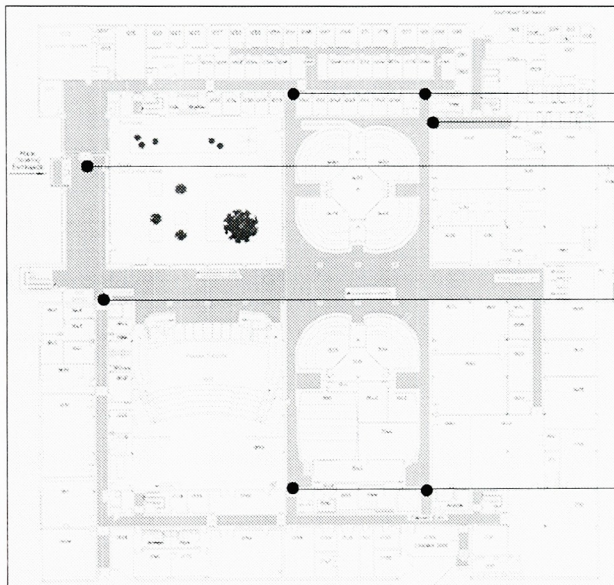
The NTID building consists of three stories and the shape of the building is an exact square. The Visitor's Center, Admissions Office, and Panara Theater are located on the first floor. Most of the offices and academic classrooms and the Center for Institute Services, Center for Outreach, Center for Student Records, Center for Technical Studies, Development Office, Student Employment Office, Switzer Gallery, and Learning Center are located on the second floor. The third floor houses specific areas such as the Hearing Aid Shop, Interpreter Training Office, and Self-Instruction Lab. Many areas are hidden in the inner corridors and it is difficult to find some offices and classrooms. NTID provides a limited signage system and it needs to establish a new, logical and comprehensive wayfinding system.

1 NTID Homepage, "NTID Mission" (2000); available from <http://www.rit.edu/~418www/new/about.html>; Internet

Research

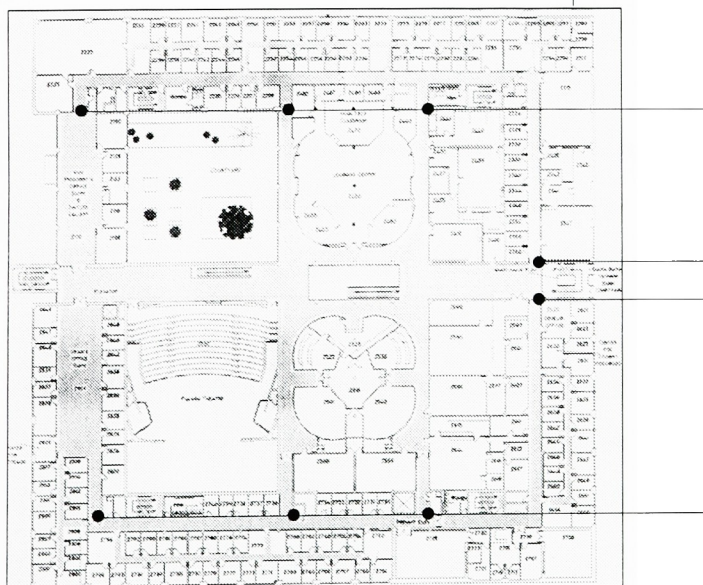
Floor plans of the building were obtained to help document some of the problems.

The existing floor plans were provided by the Institutional Services office.



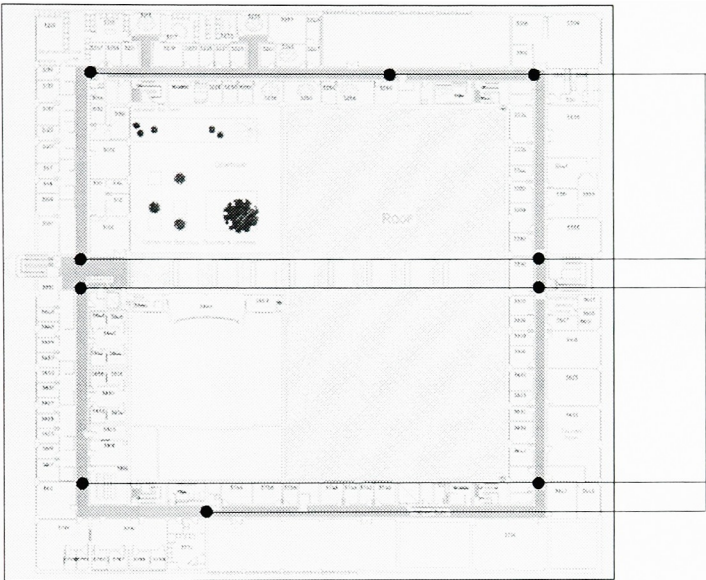
1st floor plan

Many hallway (corridor) without identification sign



2nd floor plan

Complexity of building structure



Many hallway (corridor) without identification sign

3rd floor plan

Complexity of building structure

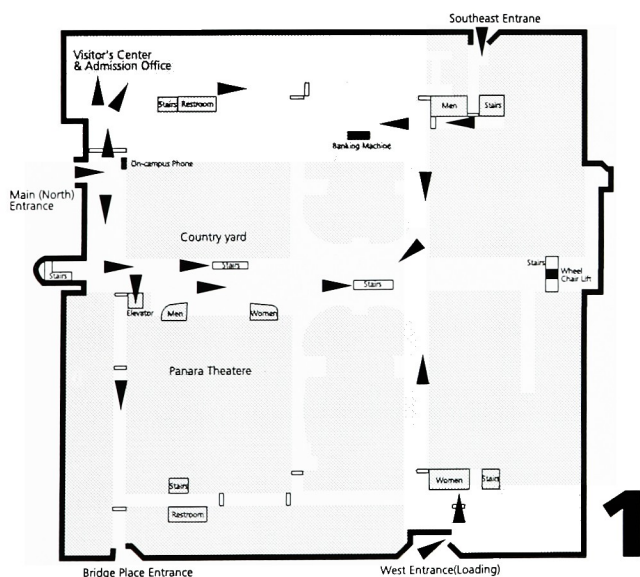
Surveying real users in the NTID building

Surveys were collected from current users: students, staff, and professors in the NTID building. Each survey examinee was asked to show his/her own daily behavior pattern on the provided interior floor plans of the NTID building. As a result, frequent interior traffic patterns were determined.

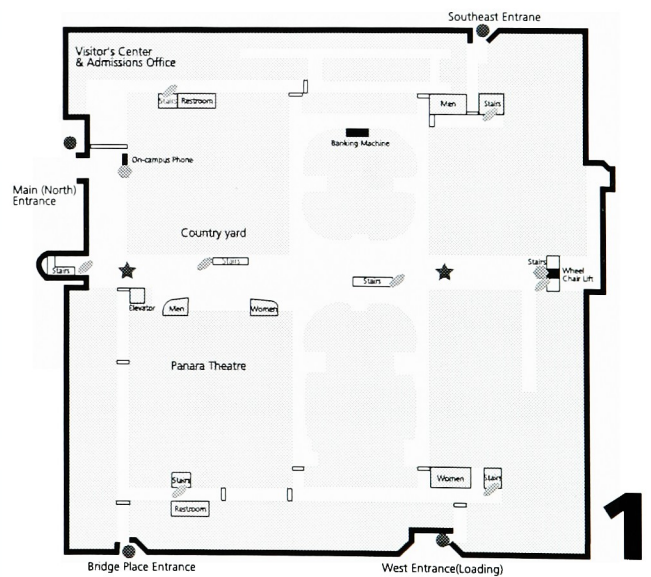
Based on the survey results(Appendix 1, page 41), proposed sign locations were decided upon. The most congested areas were selected as proper places for the signs.

The proposal categorized four sections: entrance sign, lobby sign, directional sign, and stair identification. Moreover, each identified mark indicates a specific sign and location on the map.

Interior Traffic Pattern

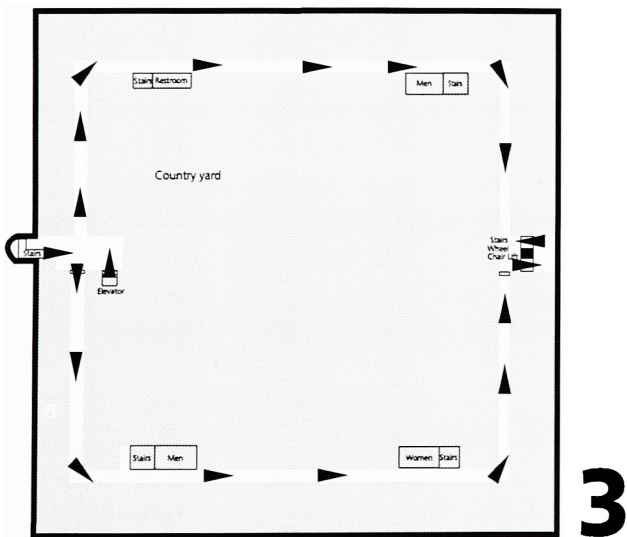
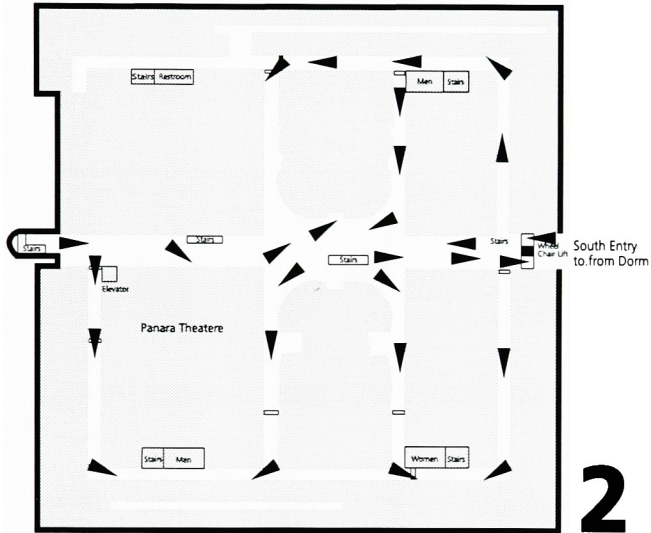


Proposed Sign Location

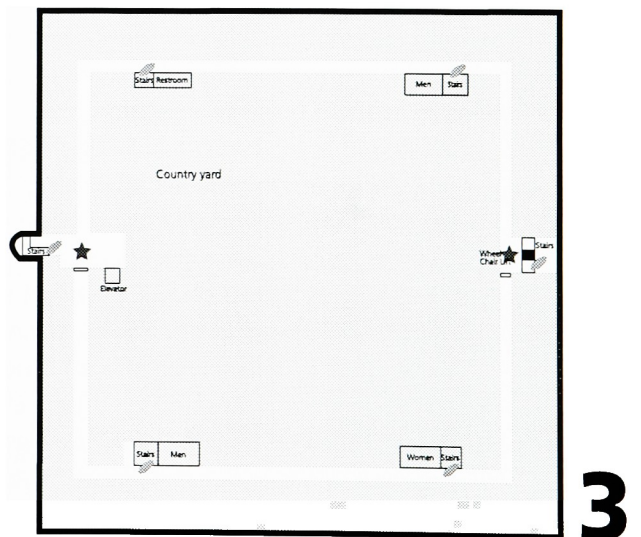
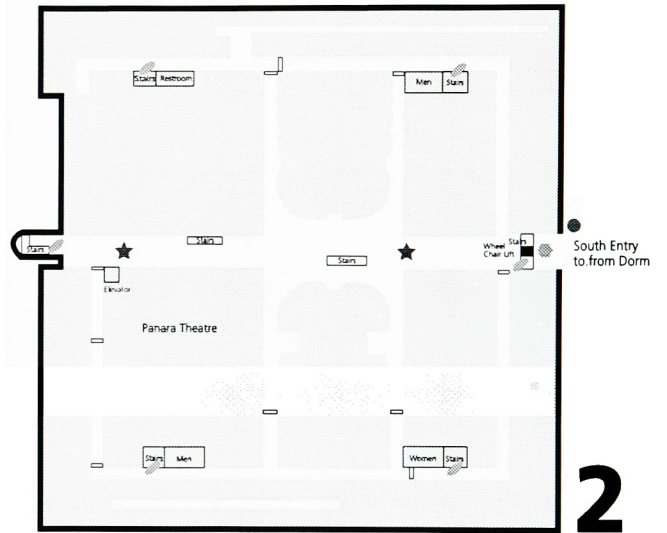


continued

Interior Traffic Pattern



Proposed Sign Location



Color Theory

Reference: *Basic Visual Concepts and Principles* by Charles Wallschlaeger and Cynthia Busic-Snyder

In Appendix 2, color variations were assessed as possibilities for sign color application. The purpose of the color study was to find appropriate colors for actual signage in the NTID building.

This color study was divided into five categories: Monochromatic Harmony, Analogous Harmony, Complementary Color Harmony, Split Color Harmony, and Triad Harmony.

First, the Monochromatic Harmony study was based on a monochromatic relationship. According to *Basic Visual Concepts and Principles*, monochromatic means the usage and variation of one hue within the color circle. Through this study, one color mixture of tints and shades shows a relationship of monochromatic color.
(see Appendix 2, page 52)

Secondly, Analogous Harmony used adjacent colors in the color cycle. In this study, the analogous color scheme was divided into warm and cool colors, so each warm and cool hue was utilized in each application to determine the warm and cool hue color relationship.
(see Appendix 2, page 53)

Complementary Color Harmony shows opposite color composition. A mixture of an exact amount of complementary colors' pigments results in gray or achromatic color. Also, a pattern of complementary colors causes a visual illusion of vibration. Therefore, Complementary Color Harmony is used for the

purpose of contrast. On Appendix 2 page 54, Complementary Color Harmony is divided into three sections: yellow and violet, orange and blue, and red and green.
(see Appendix 2, page 54)

Split Color Harmony is comprised of a primary color and two subordinate colors. The two subordinate colors are adjacent colors which are located near an opposite color of the primary color. This color study determines a contrast and an interaction among the three colors.
(see Appendix 2, page 55)

Lastly, Triad Harmony consists of three hues found by rotating the triangle at the center of the color circle. The three hues have an equidistant space relationship. This harmony results in a creative color interaction.
(see Appendix 2, page 57)

These five color studies show several possibilities of signage color. Through these color studies, several color choices were selected. Then, those selected color choices were analyzed by certain criteria. First, color coding should be clear and distinct between letters and background color. Secondly, color coding should be considered as an environmental factor. Presently, the color of the NTID building is red-brown, so the color of the building should be harmonized with the signage color coding. Lastly, color coding should be distinguishable at a distance. As a result, color coding was decided upon. Based on the "Pantone Process Color System Guide", applied colors were selected. On page 22, the color coding is presented.

After the research phase, the current needs of the NTID building were defined, and structuring process of a wayfinding system was required. The process of structuring NTID's wayfinding system was based on *Wayfinding: People, Signs, and Architecture*. (Paul Arthur and Romedi Passini 1992)

Process of Wayfinding System

- 1 Decision-making and Decision-executing
 - Decision making: a plan of structural decision
 - Decision to behavior: research
- 2 Information Processing – a process of scanning and glancing
 - Sight
 - Other sensors (hearing...)
- 3 Environmental Cognition (knowing & understanding)
 - Enhancing memory for building in a cityscape
 - The form of building – size, contours, complexity of shape, uniqueness of architectural style
 - Visibility and access: pedestrian access, possibility of moving around the building.
 - Use: function of building, percentage of usage of that building
 - Symbolic significance: historical and cultural meaning
 - Cognitive mapping
 - Structuring the environment in terms of routes: the points where they change direction, the angle of directional change, a measure of the distance from one point to another...
 - Recording the topographical relationship between critical elements of the explored environment directly, without relying on specific routes or decision plan
- 4 Spatial planning
 - Determines location of entrances & exits of a setting, location of major destination, the level of destination zone / various destination zones
- 5 Environmental communication
 - The design of an information system – people's wayfinding behavior: including visual, audible, and tactile modes

6 Classification of graphic information

- Typographic
- Hand graphic, computer graphic, photographic
- Pictographic
- Cartographic

7 Form of graphic information

- Verbal information
- Non-verbal (or pictographic) information
- Color
- Layout
- Illustration on sign

8 Graphic information for decision making

- Orientation
- General Information

9 Graphic information for decision executing

- Floor & room numbers
- Landmarks
- Location of signs
- Placement of signs

10 Evaluation

11. Implementation

Reference

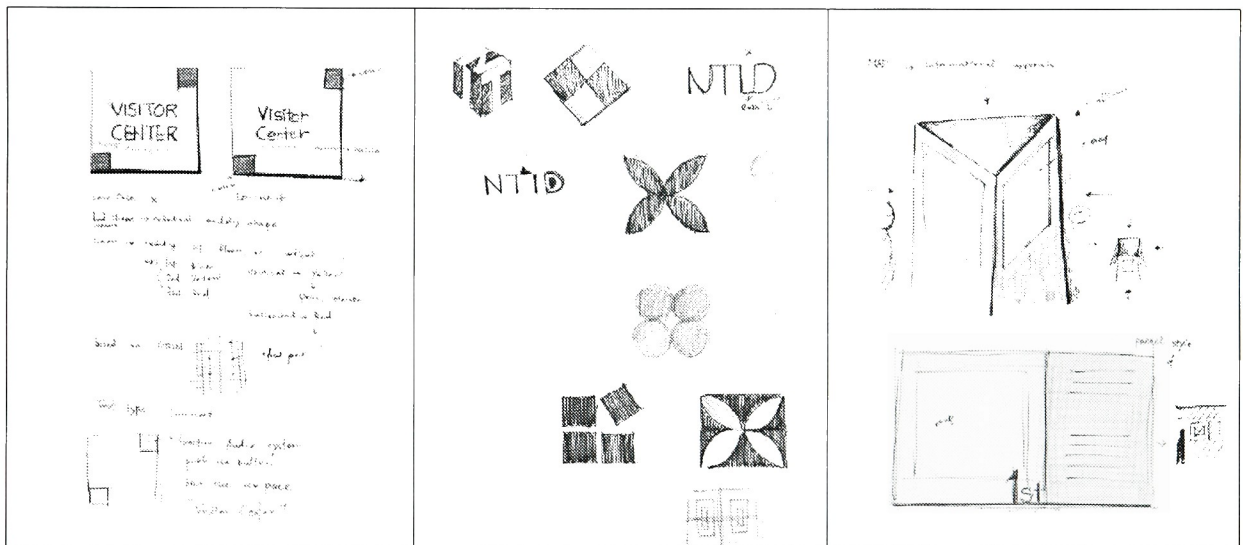
Paul Arthur and Romedi Passini. *Wayfinding: People, Signs, and Architecture*. New York: McGraw-Hill, Inc., 1992.

Ideation

Information should be organized in a logical and effective way, and be able to direct the users to their destinations. It should identify the destination upon their arrival. Each sign location is based on specific research criteria and the kind of information is decided upon according to that criteria.

There are two considerations applied in this step. One is that signage should be informative and directional. Another is the functional use of signage.

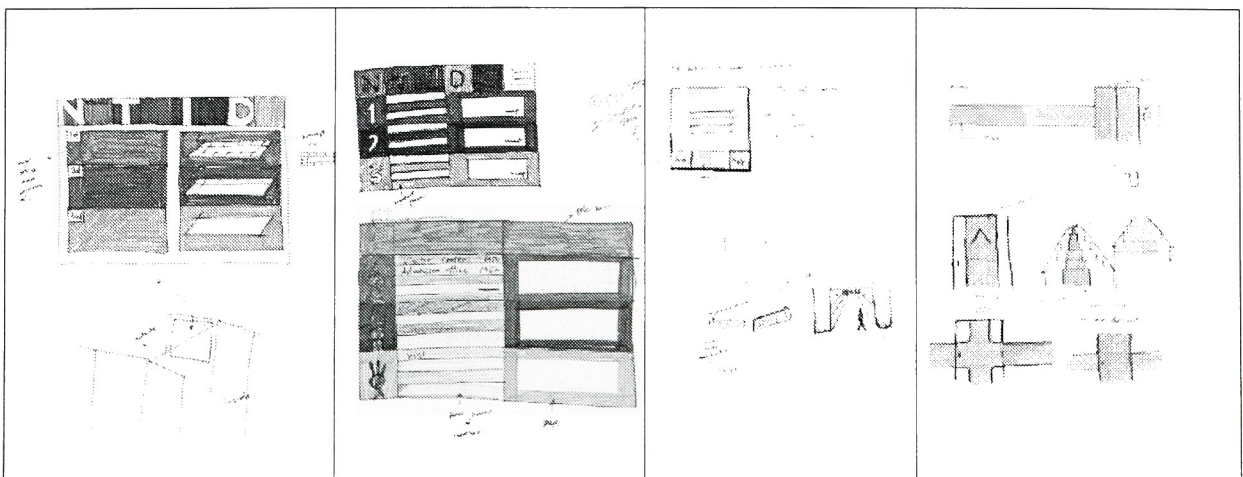
Through the preliminary sketches, the ideas developed in a simple and clear way.



Area designation

Identity

1st floor directory



Directory

Directory

Direction

Enhanced signals

Intermediate Evaluation

To evaluate ideation, specific criteria are applied.

The first criterion is "Applied Methods".
(Project Development and Evaluation, Fall 991,
Professor Deborah Beardslee)

These three specific matrices are based on
several aspects of signage criteria and basic
design principles.

The second criterion is from
"Classification of Graphics Information"
(Paul Arthur and Romedi Passini, 1992').

This matrix presents the anatomy of graphic
information and indicates which places
need what kind of information.
(Appendix 3, page 58)

The last criterion is comments from the thesis
committee members. Through several group
meetings and individual meetings, feedback
and comments were given. These are
organized by date. The feedback and
comments were directed at further
improvement of this thesis project.

In conclusion, the first criterion was for
evaluating a signage style based on basic
design concepts. The second criterion was for
evaluating proper information in
signage system. The last criterion was for
evaluating a process of project.

¹ Paul Arthur and Romedi Passini, "Wayfinding: People, Signs, and Architecture"
(New York: McGraw-Hill, Inc., 1992)

Intermediate Evaluation

Applied Methods: Three Matrices

These methods are divided into three terms:

Analysis of signage form, Functional signage,
and Efficient signage

Analysis of signage form

<i>Signage depends on location</i> \ <i>Spatial organization</i>	Linear Organization	Radial Organization	Clustered Organization	Grid / Lattice Organization
Work Environment				
Health Care and Institutional Environments				
Leisure Facilities				
Retail and Service Environments				
Urban and Temporary Environments				
Educational and Cultural Environments				

Functional signage

<i>Sign Categories</i> \ <i>Types of Graphic Sign & Symbols</i>	Phonograms & Alphabet Codes	Nonphonetic Alphabets & Codes	Nonphonetic Graphic Codes & Symbols	Diagrams Coded Sign & Types of Models
Orientational				
Informational				
Dictional				
Identificational				
Statutory (regulatory)				
Ornamental				

continued

Intermediate Evaluation

Efficient signage

<i>Impact of wayfinding Generated approaches</i>	Accessibility	Functional efficiency	Safety	Understanding
Combining				
Deconstruction				
Repetition/ ornamental				
Relevance				
Dimensional				
Simplify				

Comments from the Committee members

These comments and feedback are organized simple note style based on dates.

Feb. 8. 00. Tues 2:30–3:00PM

Comments and feedback from
R. Roger Remington

His feedback was that the proposed signage system should be considered as a system and based on this system, certain color formats and ideas were reflected in sketches. A grid system should be applied to the template page in order to make the signage system. The signage system should show a sequence of steps, like an airport gate.

Feb. 9. 00. Tues 3:00PM

Comments and feedback from
Bruce Ian Meader

His suggestions were about the whole signage designing process. The first was making a sign schedule for NTID wayfinding system in order to build the guideline for a signage system. For instance, the guideline could be classified by size, numbers of line usage, height or width, usage of font type. Secondly, sketches should identify attributes, and tangible form. Also, the sketches should identify the location of the signage and then in accurate drawings, the best one should be selected. His major concerns were overall size, grid and proportion of signage. This signage design is considered a system. For color coding, basic color studies, value study, high or low saturate study and chrome study should be considered. The color coding also has to have systematic look.

Feb. 17. 00. Tues 2:30PM

Comments and feedback from
Charles F. Lewis

He said the direction arrow was a problem and demanded showing sequence as system. Usually, the purpose of a university sign is for the convenience of the people, so the signage design should consider this point. Also, a design issue in the signage design was human scale. How to work in a given space is the most important point in the notion of scale. Exchangeable signs for summer and breaks should be considered. Using plain language is important. For instance, restroom signs are confusing, so the language use should be clear. Also, the materials used for the signage should be compatible Institute materials.

Feb. 15. 00. Tues 2:30–3:00PM

Comments and feedback from
R. Roger Remington

Arrow types should be unified. Showing samples of signage and the proportions of the signage should appear in the sketches. The crucial aspect is unifying signage as one system. A color system and an experimental font type were considered for the application.

Feb. 21. 00. Tues 3:00PM

Comments and feedback from
Bruce Ian Meader

He suggested making simple diagrams indicating decision points. For instance, making a simple building diagram would provide a visual aid for signage placement. All signage has to meet fundamental requirements of the American with Disabilities Act (ADA). Also, he mentioned certain criteria should be established. Mapping out the scope of

Intermediate Evaluation

the project, a blue print will determine the level which is informational or directional or identificational. Users' traffic patterns will determine decision points. Knowing the navigator's destination is a important consideration

Mar. 6. 00. Mon 1:00–1:30PM

Thesis Committee Meeting

In the thesis committee meeting, project progress was reported on as four subjects: position of signage (inside of the NTID building), behavior pattern (inside of the NTID building), design of signage, and type use. Comments from thesis committee members addressed scale consideration based on human factors, marking up actual size for each standard size, checking spelling, alignment and margin of letters based on the grid system, considering wall materials, color consideration, changing size of arrow mark, thinking about consistency of two diamond shapes, making simple directional signage like an entrance sign, proportion based on the grid system, making a constructive and consistent system, simplifying the signage, height consideration, and refinement.

Mar. 20. 00. Mon 4:00–5:00PM

Comments and feedback from
Bruce Ian Meader

His greatest concern was the ADA issue and that the signage design should follow a logical sequence. In the thesis statement, giving a subtitle to each paragraph will identify the thesis definition. For color selection, several color combinations based on basic color theory should be tried.

Mar. 27. 00. Mon 1:00–1:30PM

Thesis Committee Meeting

For preparing the thesis show, a prototype of five posters (24 / 36 inch) were presented. Comments were to make the signs the actual size to aid the audiences, understanding, and to be careful about the background color use of the poster.

Requirements and guidelines for implementation

Through the process, graphic information is classified and analyzed in a systematic way. The measurements of each sign are based on The Society for Environmental Graphic Design (SEGD)'s Clarification and Interpretation of the the Americans with Disabilities (ADA) Signage Requirement and the average person's height.

The book, *Human Dimension & Interior Space* by Julius Panero and Martin Zelnik, provides measurements the stature of men and women. 95% of men and women's height falls within the following range: men – 70.5 in (179.1cm)~72.8 in (184.9),and women – 64.9 in (164.8 cm) ~ 67.1 in (168.7cm). Based on these measurements, the average human height was determined, and became a guideline for establishing signage height.

The *White Paper* suggests 80" as the minimum distance between the floor and the bottom of hanging signage. Also, there should be 60" from the floor to the center of the regulatory signs. Pictograms should be within a 6" field, and for room identification, letter size cap height is 5/8" minimum and 2" maximum with all caps, tactile and Grade 2 braille.

This implementation follows the above regulations and satisfies functional and aesthetic aspects.

Graphic elements for implementation

The two diamond shapes in the signage reflect the abstract sculpture in front of the NTID building in order to maintain a familiar image of NTID.

The choice of alignment is centered for the upper part of the signage and flush left for the lower part of signage. Center alignment is to provide contrast between the NTID typography and other directional typography. Flush left alignment is for maintaining a systematic look for the signage.

Material choice for implementation

The material chosen for the NTID signage was .080' non-glare acrylic. According to Craig Tesler(Empire Forster), non-glare acrylic material is usually used for typical academic signage. Moreover, specific setting text and numbering were applied because the ADA requires specific setting method for academic interior signage. Usually, the color of materials is selected from the Pantone Color system. Also, the sign includes Grade 2 braille routed into the face based on ADA specifications. For accessibility of the sign, APCO notebar² which is exchangeable is used. There are two ways to install the signs. The small size of sign is mounted with VHB 3M #4950³ adhesive tape, and the large sign is hung on a specific screw with a rubber cap because of its weight. The budget of the sign project depends on the project. For instance, Craig Tesler said that the RIT Dormitory sign project took four years work including research for a cost of \$75,000.

1 Thickness of material

2 Sign manufacture

3 Manufacture adhesive tape

Sequence of Implementation

This Implementation is divided into three sections: signage with measurements, the final signage color choice, and the thesis show poster.




First, three measurement designations were used in order to measure the signage easily: inch, cm, and foot'. Each sign was designed on a specific grid system. Typefaces used were Frutiger and Palantino because of readability and aesthetic aspect. Frutiger is selected for its high readability. "Schiphol Airport Signing"¹ used the Frutiger typeface for high clarity. The Palantino typeface is selected for its classical and academic image for the NTID. In signage design, additional technical drawings representing doors and human figures were used for scaling size between signage and environmental factors. A color bar was used for indicating the average human height, and each sign reflected human considerations.

Second, through the color study (Appendix 2, page 51-57), the final color was decided upon. After testing several color combinations, several color examples were selected by certain criteria(see page 11), and then those color examples were printed out in black and white for assessing value and contrast of colors.

Finally, the thesis show posters presented a process of wayfinding based on the process structure.

¹ Peter Wildbur and Michael Burke, *Information Graphics*. London: Thanes and Hudson Ltd, 1998.

Signage with Measurements

use of measurements	Inch 1	CM 2.54	Feet 12			
use of type	Frutiger	Palatino				
use of color		C 0	M 20	Y 100	K 0	
		20	0	0	70	
		10	100	80	30	

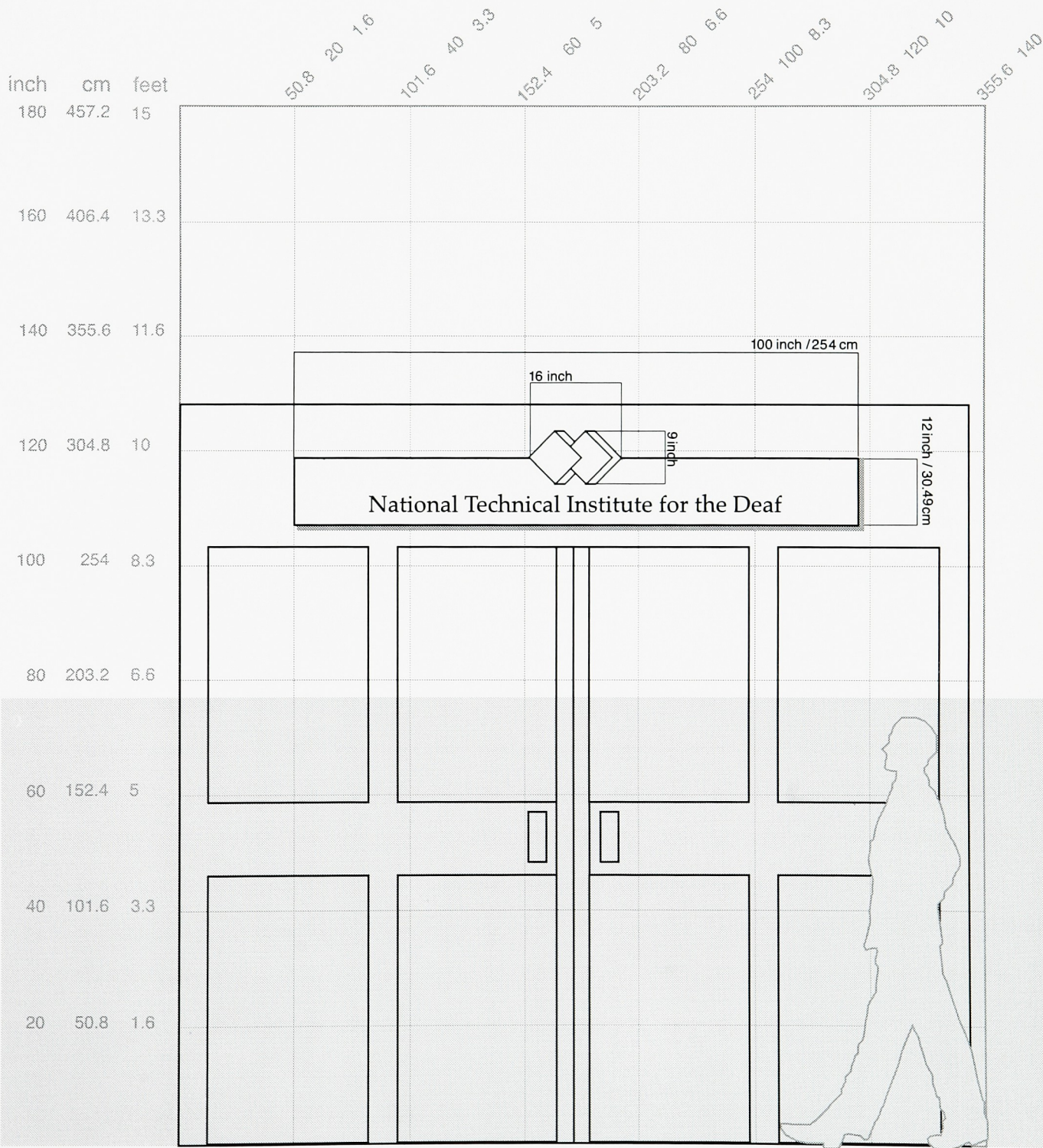
Frutiger

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Palatino

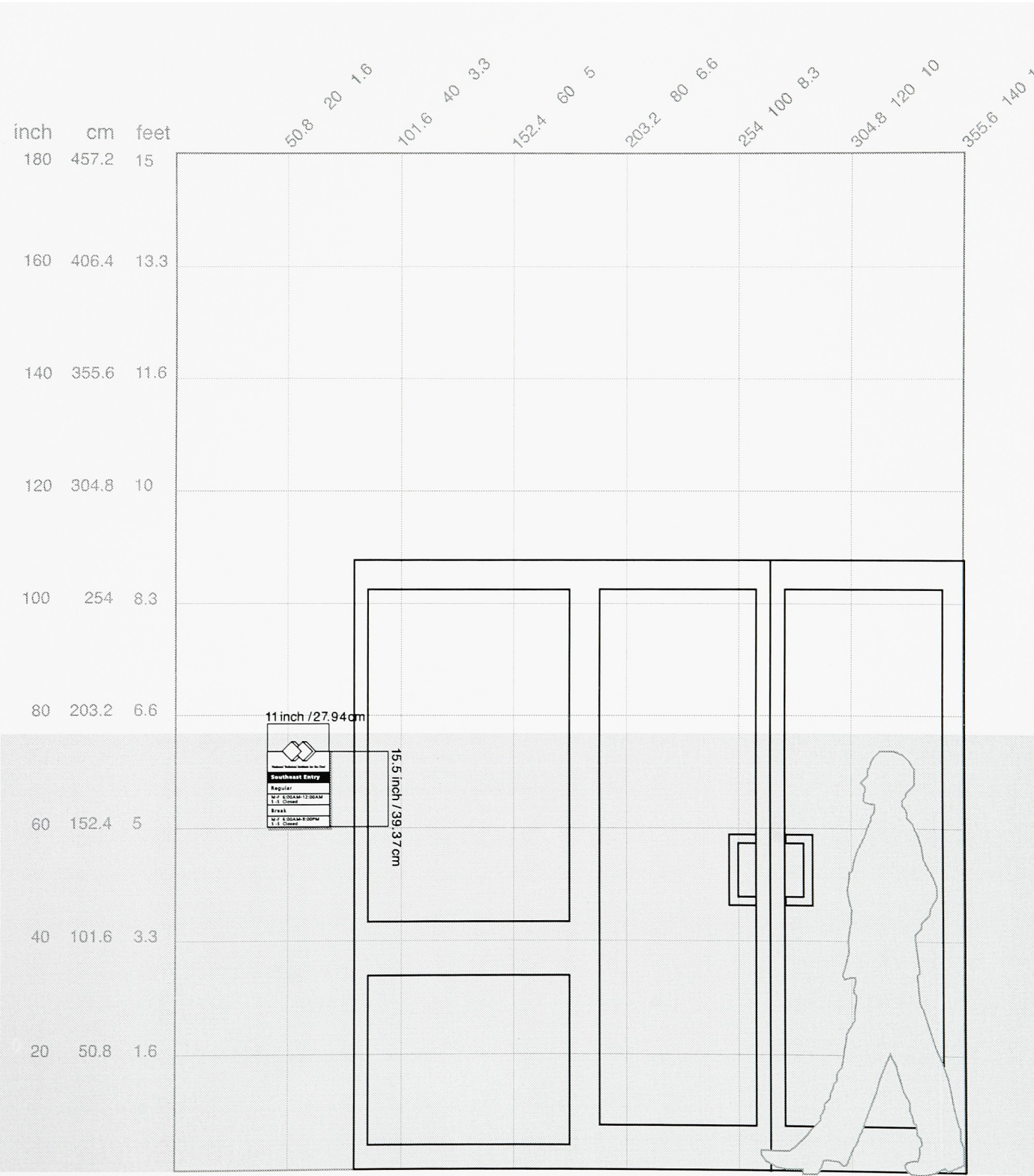
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

■ Entrance Sign



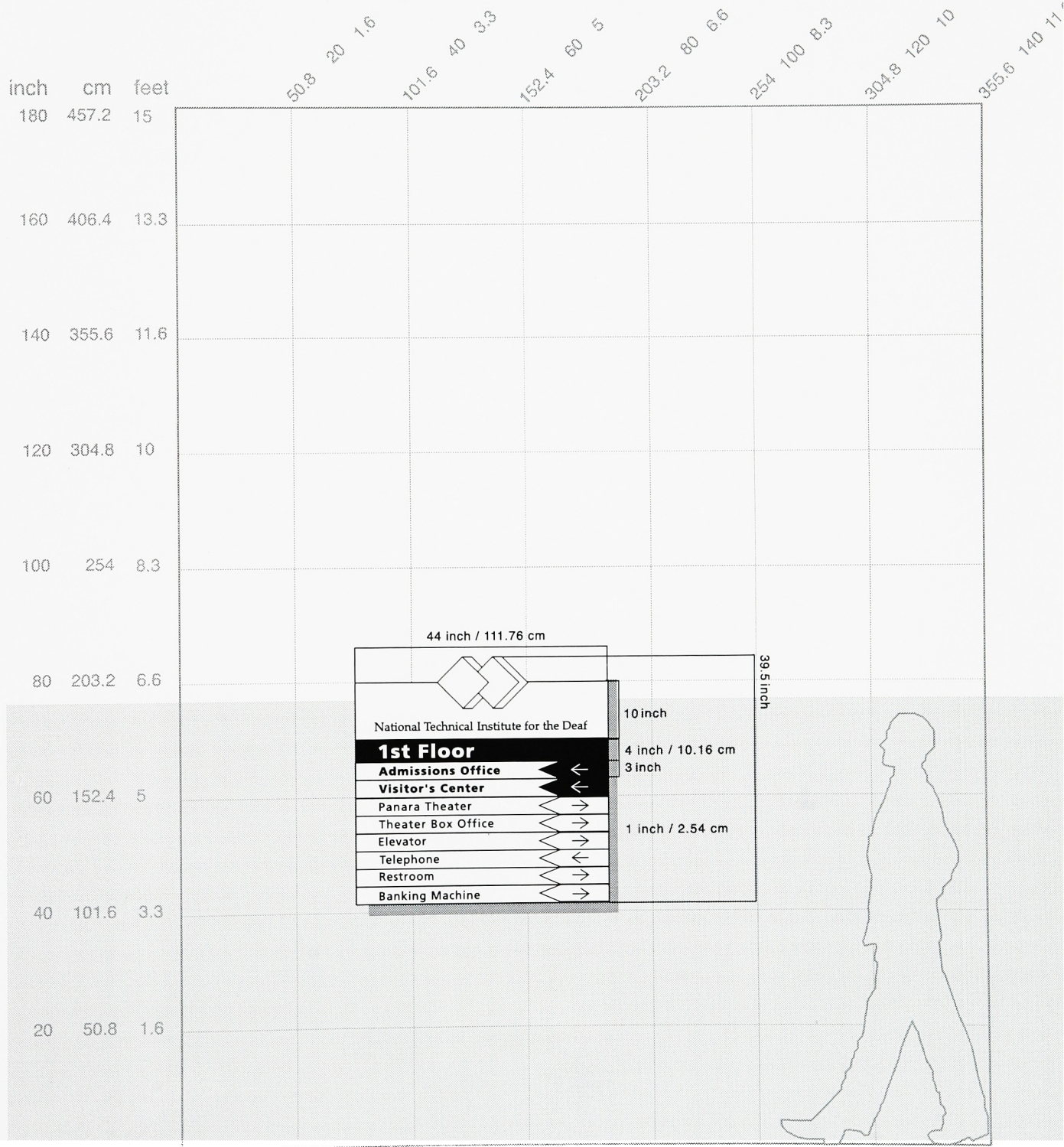
Implementation

■ Entrance Sign



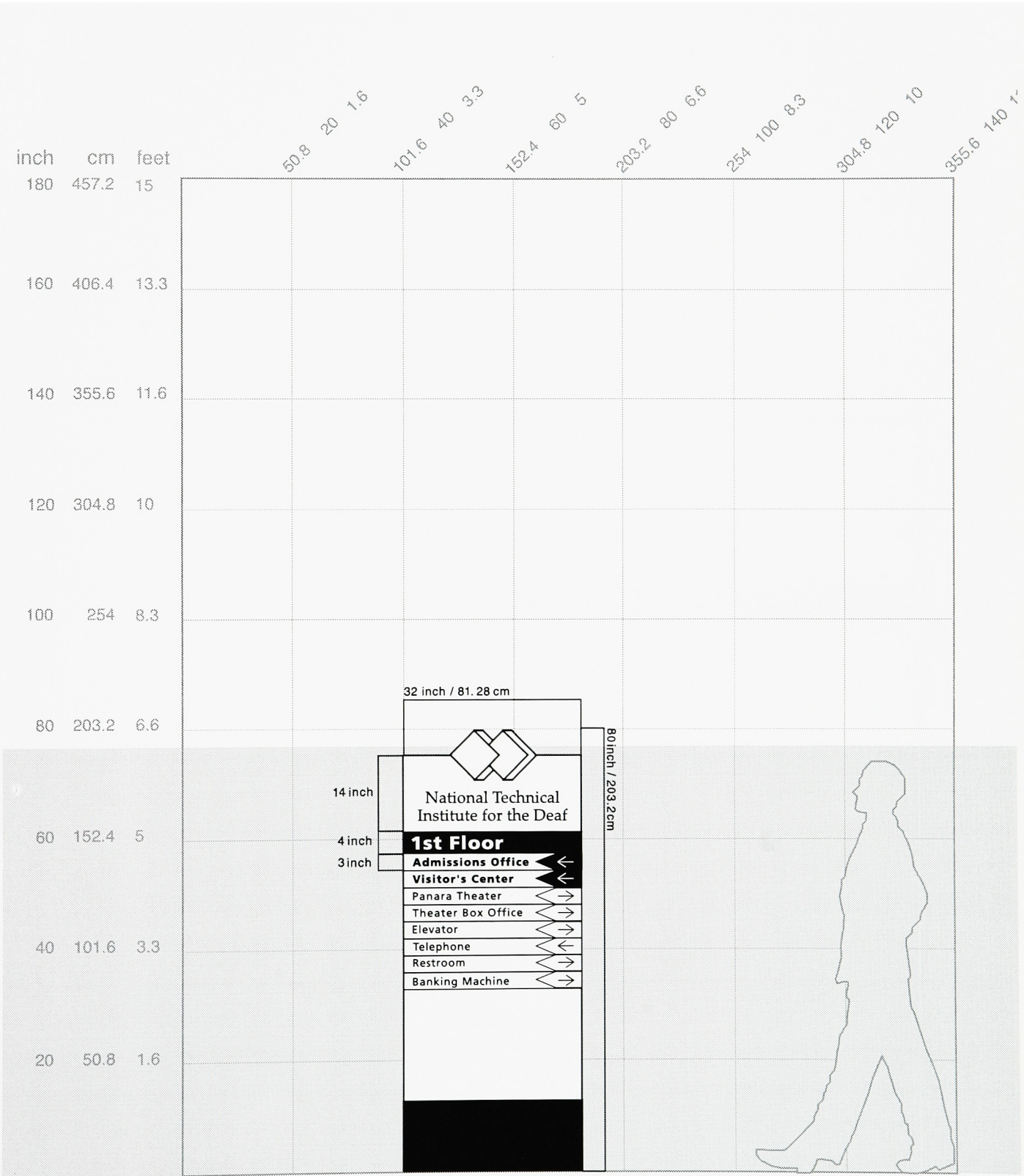
Implementation

● Lobby sign



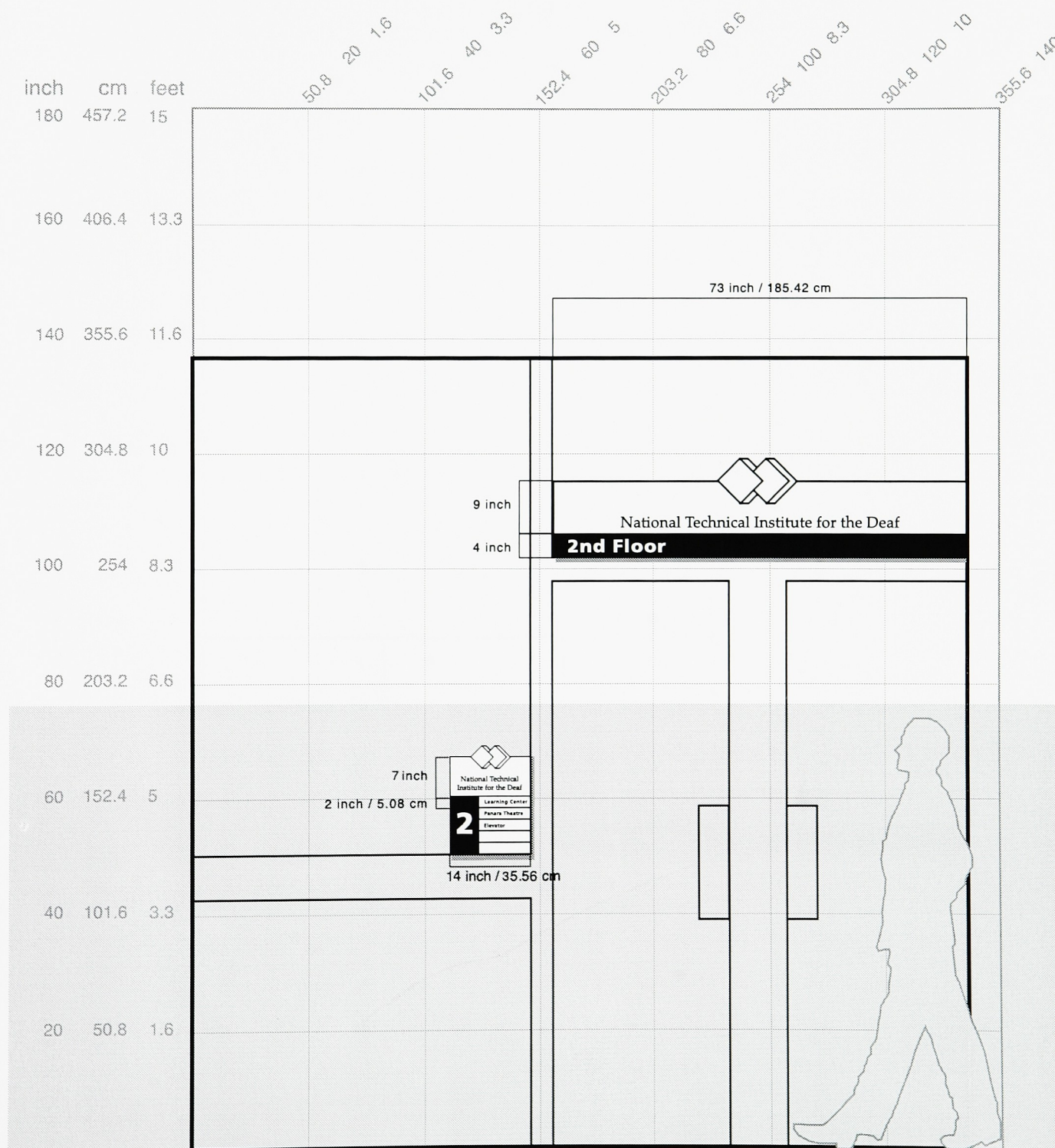
Implementation

→ Directional Sign

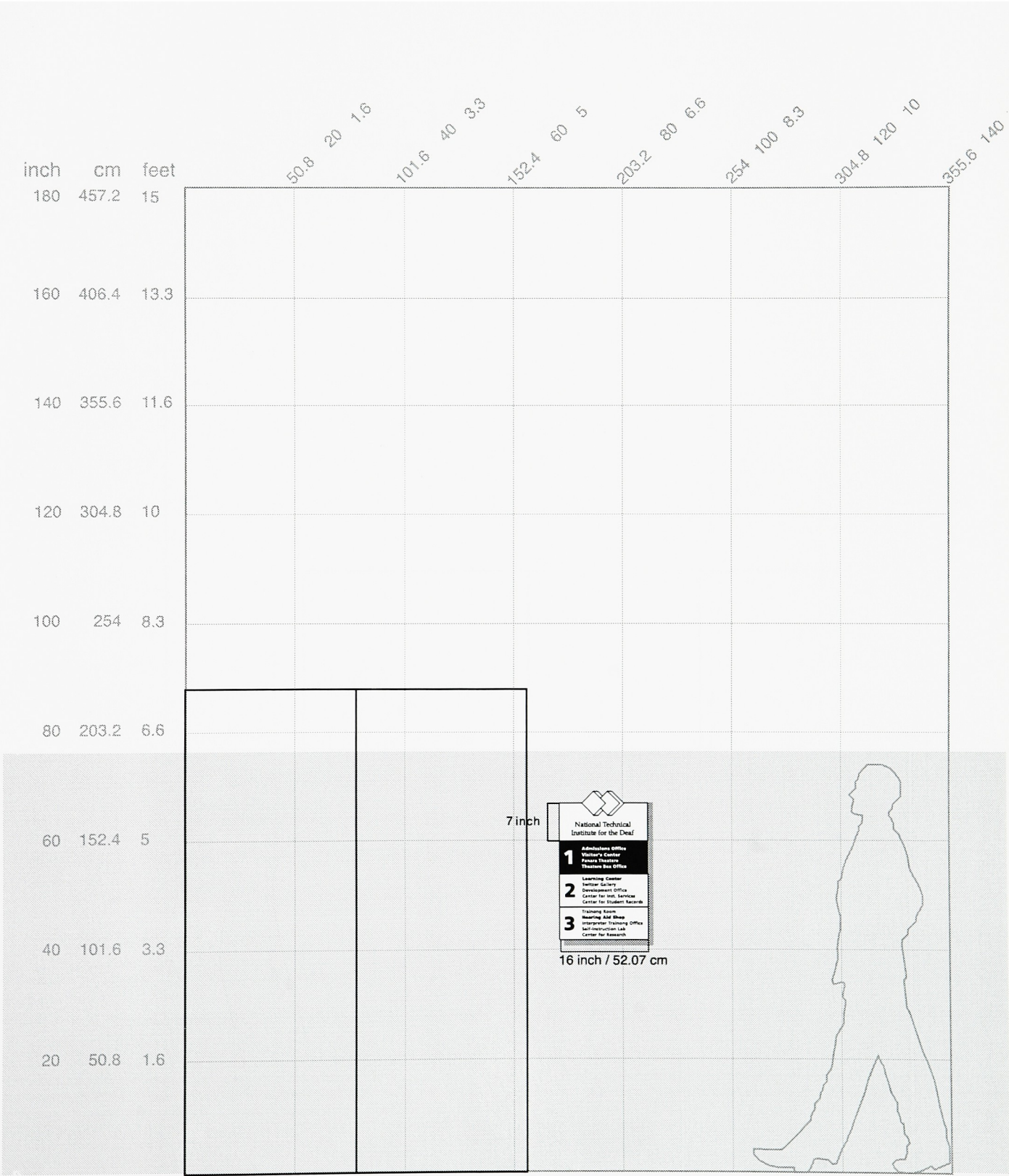


Implementation

Stairs

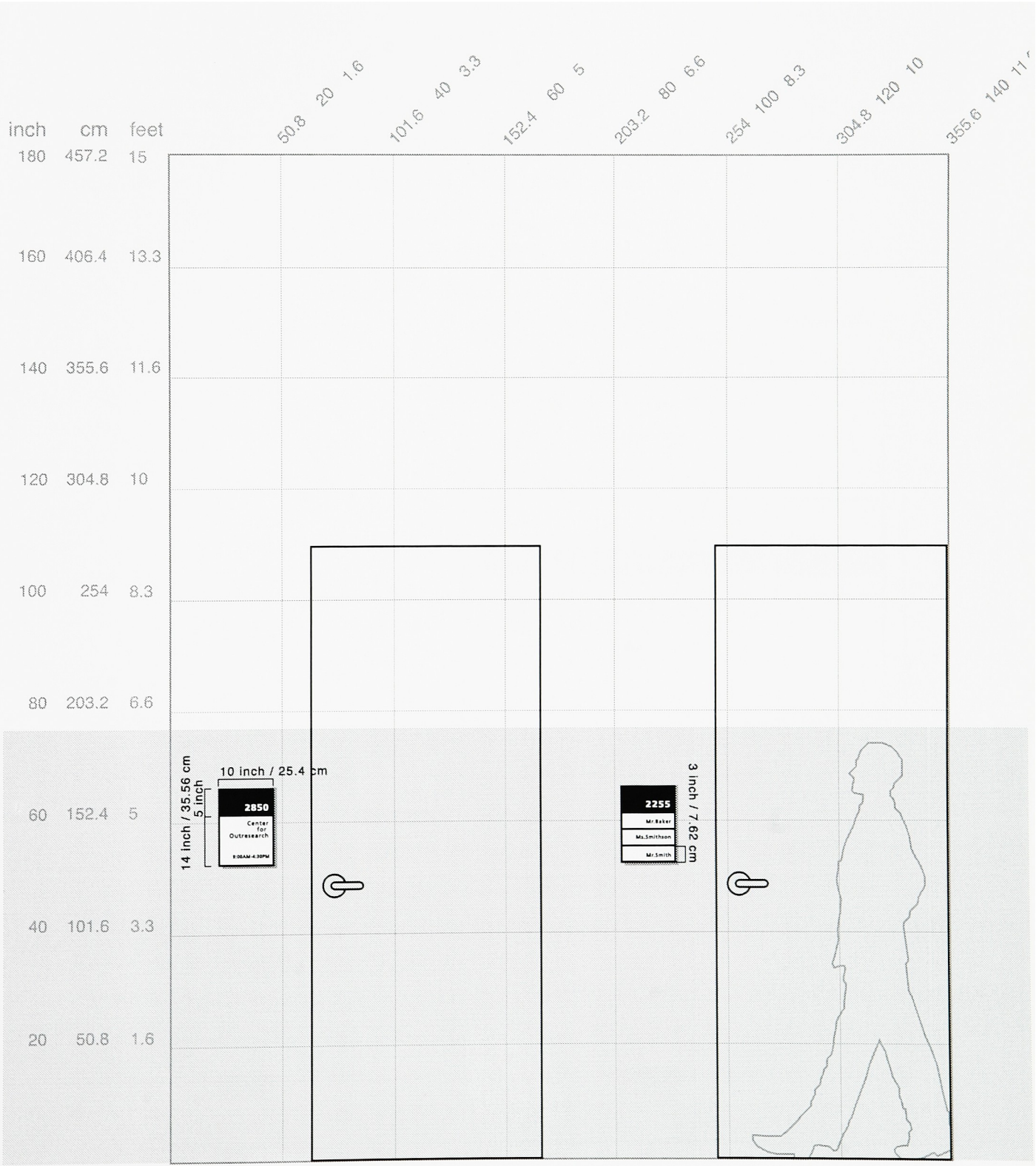


Elevator Lobbies



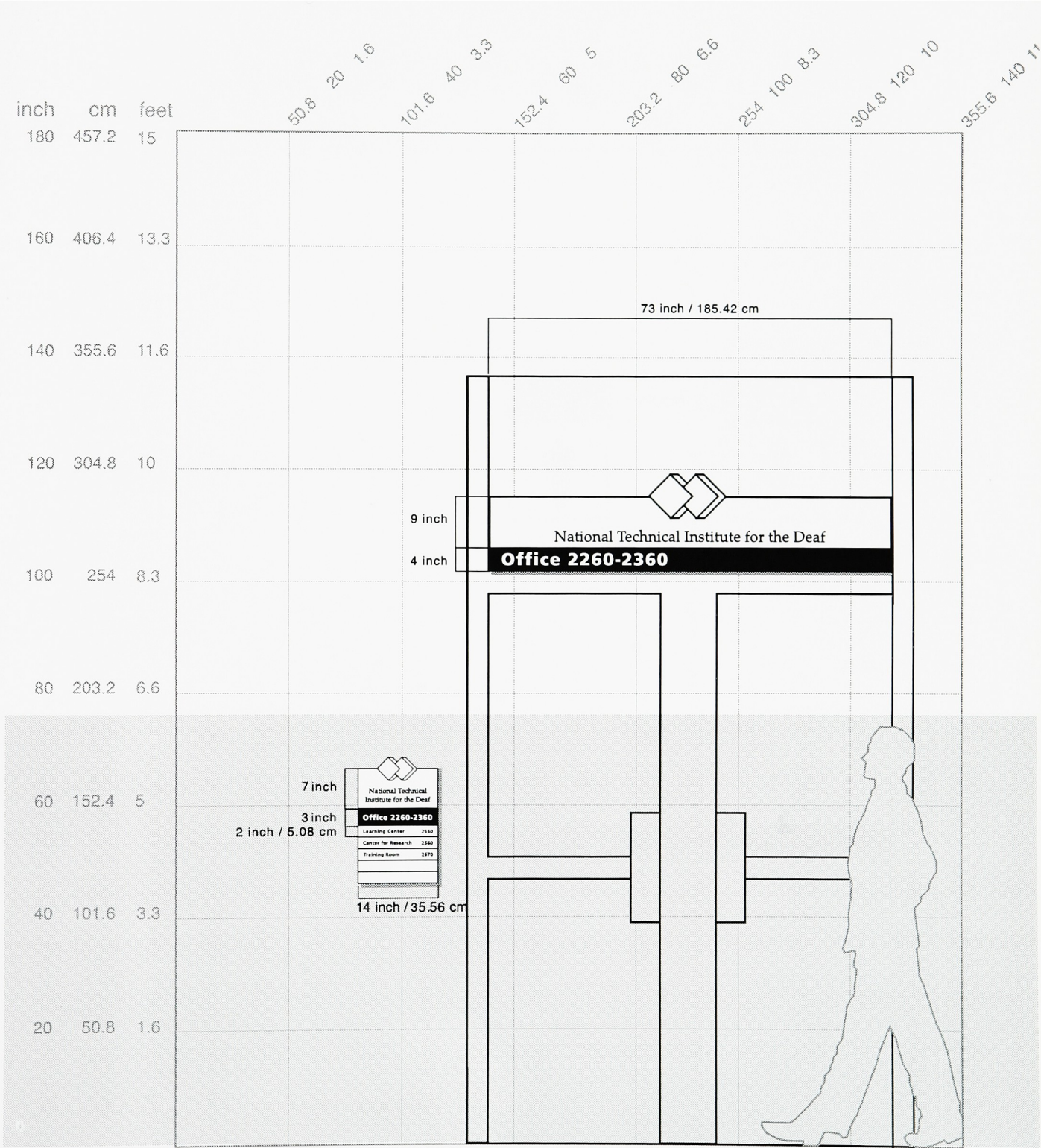
Implementation

Room Identification



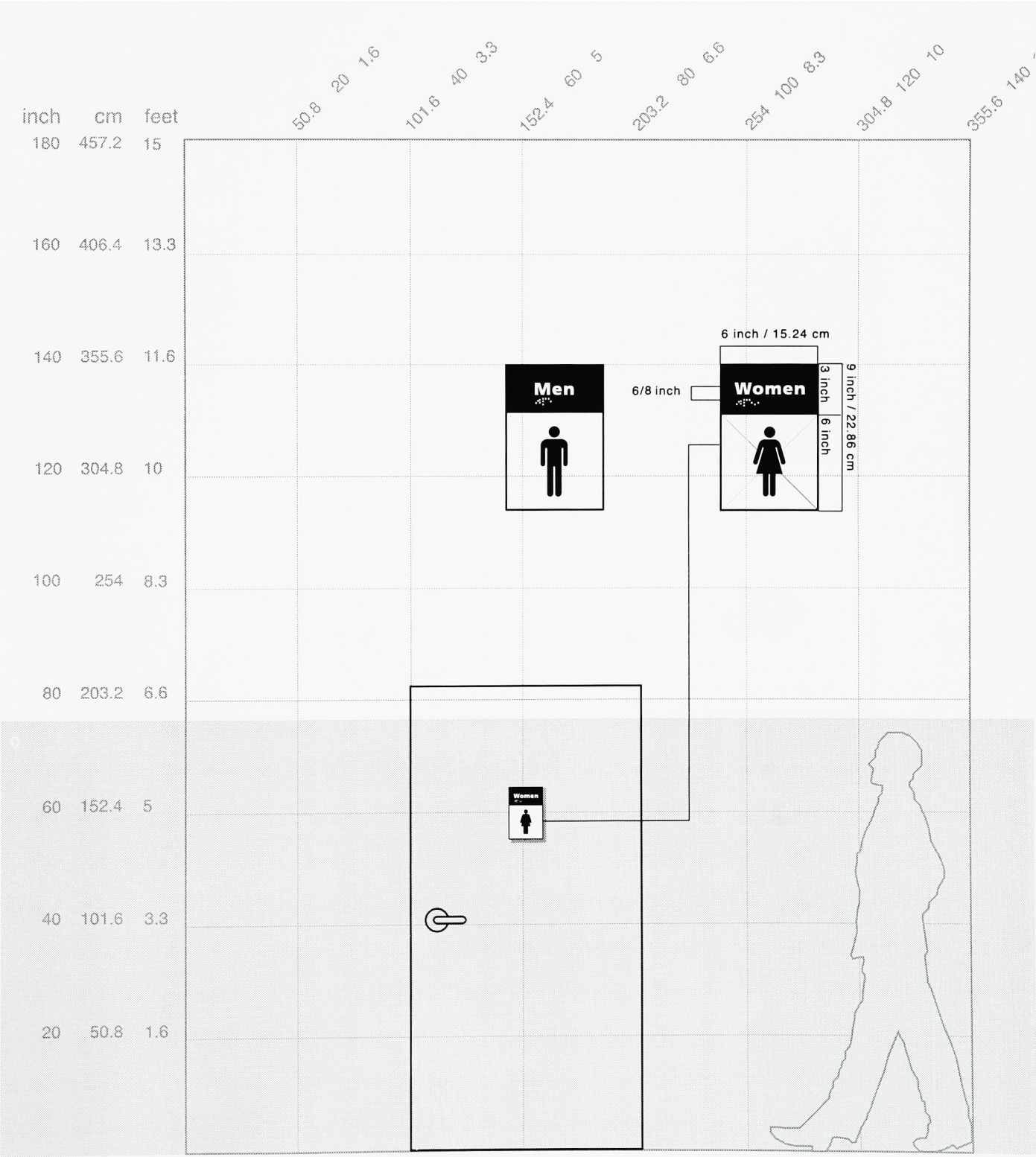
Implementation

Corridor Intersection



Implementation

Regulatory




Implementation

Color



National Technical
Institute for the Deaf

1st Floor	
Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→




National Technical
Institute for the Deaf

1st Floor	
Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→



National Technical
Institute for the Deaf

1st Floor	
Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→



National Technical
Institute for the Deaf

1st Floor	
Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→



National Technical
Institute for the Deaf

1st Floor	
Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→



National Technical
Institute for the Deaf

1st Floor	
Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→

Implementation

National Technical Institute for the Deaf

Southeast Entry	
Regular	
M-F 8:00AM-12:00AM	5-11 Closed
Break	
M-F 5:00AM-9:00PM	5-11 Closed

National Technical Institute for the Deaf

1st Floor

Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→

National Technical Institute for the Deaf

1st Floor

Admissions Office	←
Visitor's Center	←
Panara Theater	→
Theater Box Office	→
Elevator	→
Telephone	←
Restroom	→
Banking Machine	→

National Technical Institute for the Deaf

2nd Floor

National Technical Institute for the Deaf	
Learning Center	
Panara Theatre	
Elevator	
2	

National Technical Institute for the Deaf	
1	Admissions Office Visitor's Center Panara Theatre Theater Box Office
2	Learning Center Senior Gallery Development Office Center for Int. Services Center for Student Records
3	Training Room Hearing Aid Shop Hearing Research Training Office Self-Instruction Lab Center for Research

2255
Mr. Baker
Ms. Smithson
Mr. Smith

2850
Center for Outreach
9:00AM-4:30PM

Women

National Technical Institute for the Deaf

Office 2260-2360

National Technical Institute for the Deaf	
Office 2260-2360	
Learning Center	2350
Center for Research	2360
Training Room	2370

Implementation

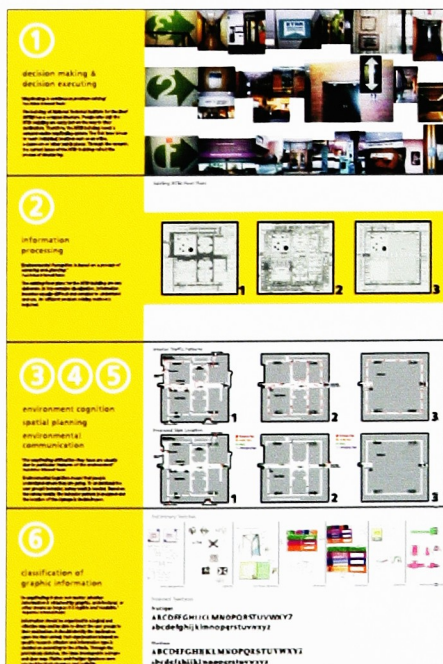
Thesis show panels: A process of wayfinding



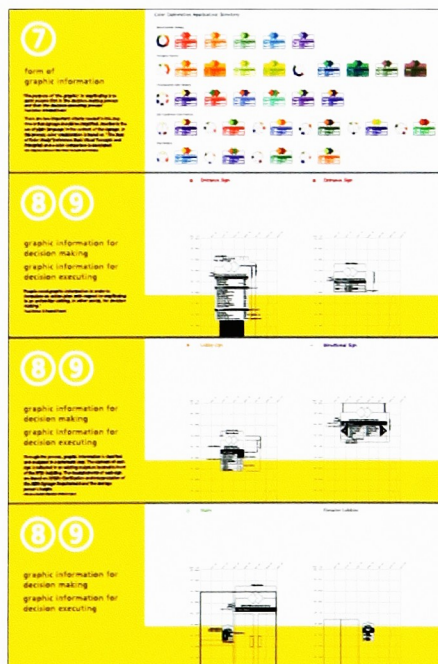
Poster 1



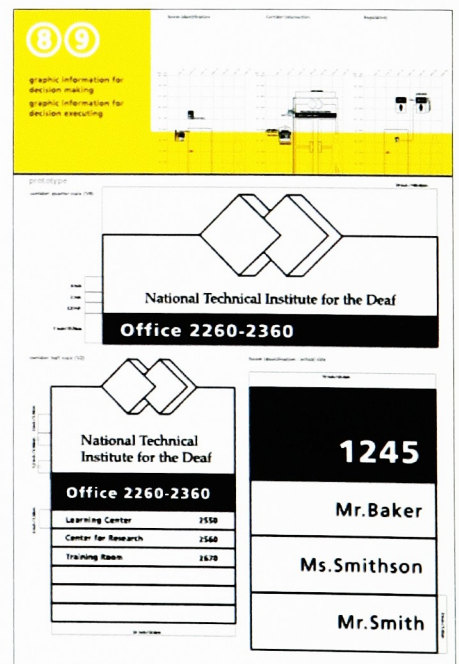
Poster 2



Poster 3



Poster 4



Poster 5

This proposed interior wayfinding system is an effective signage program for visitors and daily users in the NTID building.

Unified signage will be easily identified because of its own visual character. Also, color consistency and readable typography will be maintained throughout the implementation.

Second, providing clear information and proper location of signage will reduce confusion considerably. Users will be provided with clearer information with this wayfinding system.

Finally, this wayfinding system will facilitate more effective navigation, reducing wasted time and stress. Also, this approach could be applied to wayfinding systems for other universities, as well as airports, hospitals and any other public places.

First Retrospective Evaluation: an evaluation questionnaire from the thesis show

To determine implementation, an evaluation questionnaire was available during the thesis show exhibition. A total of eight people evaluated the progress of wayfinding posters which were displayed in the thesis show.

Five questions were asked for the evaluation. Most of the respondents understood the progress of the thesis. However, some respondents wondered about some aspects. One of the respondents wondered how different color variations came into play. Another respondent suggested making a 3D sign prototype.

Through these evaluation results, weaknesses and strengths of the thesis project were identified. The weakness is about color choice. The thesis show panel provided partial color coding for the NTID signage system, so it provided an unclear explanation for color choice. The strength of the project is the systematic sequence of the project based on "Process of Wayfinding System" (page12-13).

Evaluation questionnaire results: Appendix 4 (page 62–69).

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NTID signage?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

Retrospective Evaluation

Second Retrospective Evaluation: comments and feedback from thesis committee meeting

April. 24. 00. Mon 12:00–1:00PM

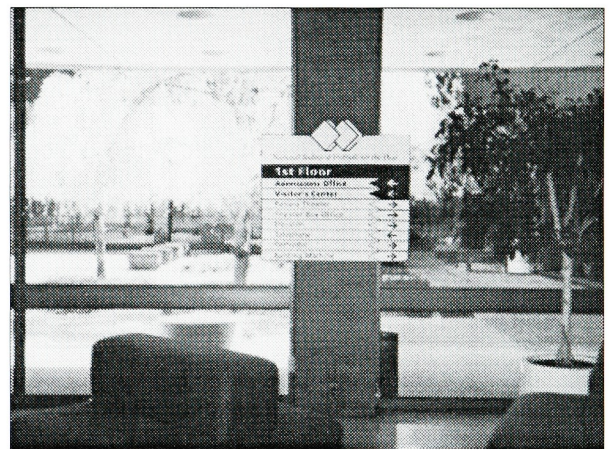
Scale and material issues were the main concerns from the thesis committee members. For scale, making the actual size of the signage was suggested. For the material issue, meeting with experts was suggested. Based on those comments, a third retrospective evaluation was started.

Third Retrospective Evaluation: an evaluation questionnaire from thesis show

Scale is the most crucial issue of the NTID signage design, so for estimating the actual size of the NTID signage, a set of signage prototypes was made. As a result, the NTID signage was modified to the proper size. After that, modified signage prototypes were made again and applied in the NTID building. Signage for nine areas was produced: Entrance Sign (not main), Lobby Sign, Elevator Lobby Sign, Regulatory Sign, Room Identification Sign, Corridor intersection Sign and Stair Sign. Those signage prototypes were printed in Black and White and mounted on card paper. The author's photographs presents the applied signage prototypes in the NTID building.



Entrance Sign(small)



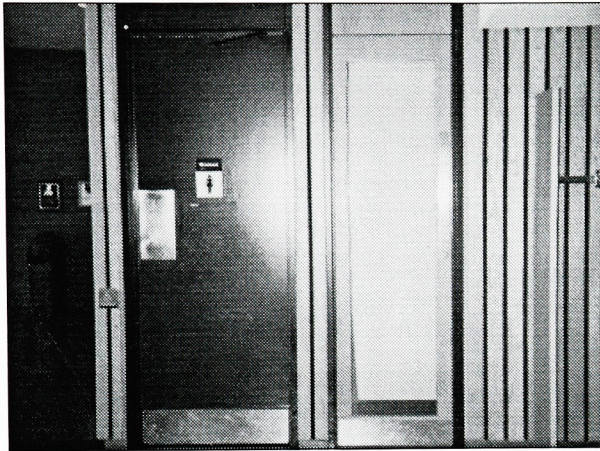
Lobby Sign



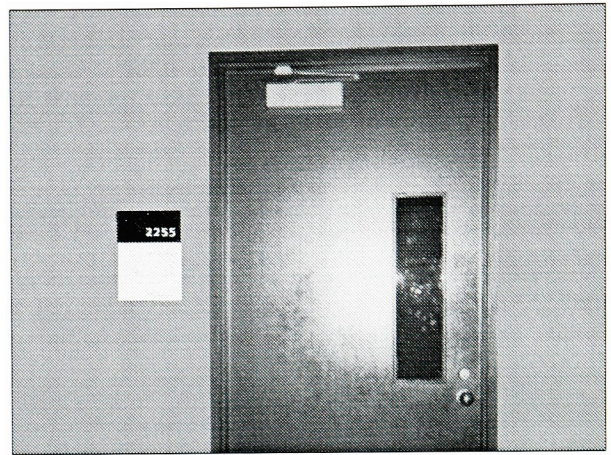
Elevator Lobby Sign

(continued)

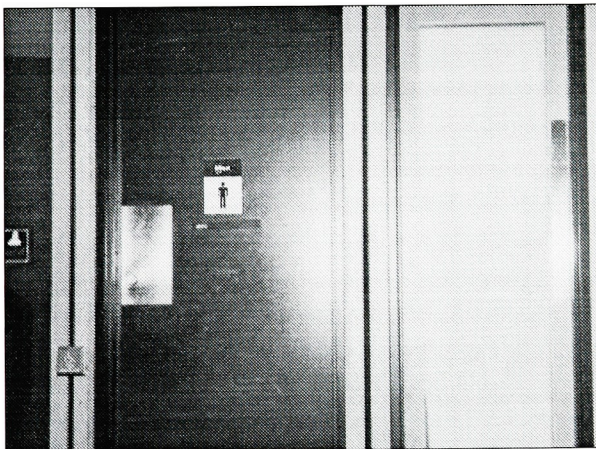
Retrospective Evaluation



Regulatory Sign



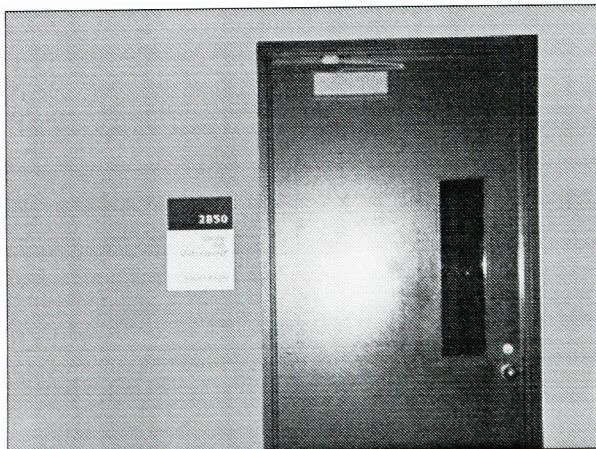
Room Identification Sign



Regulatory Sign



Corridor intersection Sign



Room Identification Sign



Stair Sign

Conclusion

Romedi Passini said "Wayfinding is an act of solving spatial problems".¹ Simply stated, wayfinding is a process of decision-making and decision-executing to arrive at a destination. Depending on human perception, decisions and spatial behavior were decided upon. After that, cognitive behavior patterns were established. Finally, a wayfinding system was constructed.

The NTID wayfinding system is very challenging work because the wayfinding system is not only a signage design but also a total design solution which includes information design, system design, communication design, sign design, human centered design and environmental design. For establishing the wayfinding system, many issues were considered.

Interviewing the NTID managers and designers was a good start to understanding the issues of the NTID wayfinding system. Through much research, several facts were discovered. Taking pictures of the NTID building was done to analyze the problem. Structuring the process of wayfinding became a basic structure of this thesis. Theories and existing case studies were helpful in solving the problems. The thesis committee members' comments and feedback from respondents influenced the further implementation positively.

The difficulty of this project was scale. Each sign reflected human factors. In particular, the environmental factors needed to respond to the ADA regulations.

Through this thesis project, the need and purpose of a wayfinding system has been studied and defined.

This project was started without knowing anything about signage and wayfinding. During the process, many difficulties occurred and mistakes happened and were repeated. Sometimes, it was painful to go back to the beginning of the step or start a completely new step. Helpful comments, feedback, and support improved the project. The most important aspect of this thesis project is how to present it to audiences in an understandable way, and that was the most difficult issue of the project.

1 Romedi Passini, "Wayfinding in Architecture" (New York:Van Nostrand Reinhold Company Inc., 1984)

Dimension	The actual size of figures and forms within the visual field measured in standard units such as picas, inches or meters. The dimensions of a regular planar figure are measured according to height and width, whereas the dimensions of a regular volumetric form are measured according to height, width and depth
Identificational signs	Identificational signs are essentially labeling devices which confirm destinations or establish recognition of a particular location
Orientational signs	Orientational signs locate users in an environment
Ornamental signs	Ornamental signs embellish, enhance or beautify the appearance or general effect of an environment or its individual elements.
Sign	A symbol or compositional element that represents thoughts, objects, or events
Signage	The design or use of signs and symbols
Spatial Organization	The relationship among spaces of a setting; the typology of spatial organizations is equivalent to that of circulation systems, that is: linear, central, composite, and repetitive (networks)
Statutory signs (regulatory signs)	Statutory signs display rules of order, as for conduct or prohibited activity, prescribed by local regulations owners or other authorities
Wayfinding	Finding one's way to a destination; spatial problem solving comprised of three interdependent processes: decision making, decision executing, and information processing

Index of Appendices

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Appendix 1

Survey questionnaire 1

1. Do new commers or visitors find the visitors center easily the first time?

Yes, we provide maps
and they get personalized
tours.

2. What destinations or locations do people frequently ask for?

Flower deliveries
Restraurant Deliveries
other people who work here

3. When visitors came to the visitors center or other offices to ask about their destination, how do you guide them to the right place?

Look up person they are
looking for and give directions

4. Do you think current NTID signage gives enough information to newcomers or visitors?

Yes.

5. Do you have certain rules(or behavior patterns) to guide newcomers or visitors?

No just try best to
show them around our
College

Appendix 1

Survey questionnaire 2-1

Hello. My name is JinHee Kwon from Grad Graphic Design.
My thesis topic is a wayfinding system for the NTID Building.

Therefore, I'd like to have some information about your paths to work or classrooms from particular entrances and exits.

Can you use different color markers for your daily routes in "map" templates?

Thank you for your help.

Name: Kathy Ronnenberg

Your position: faculty

staff

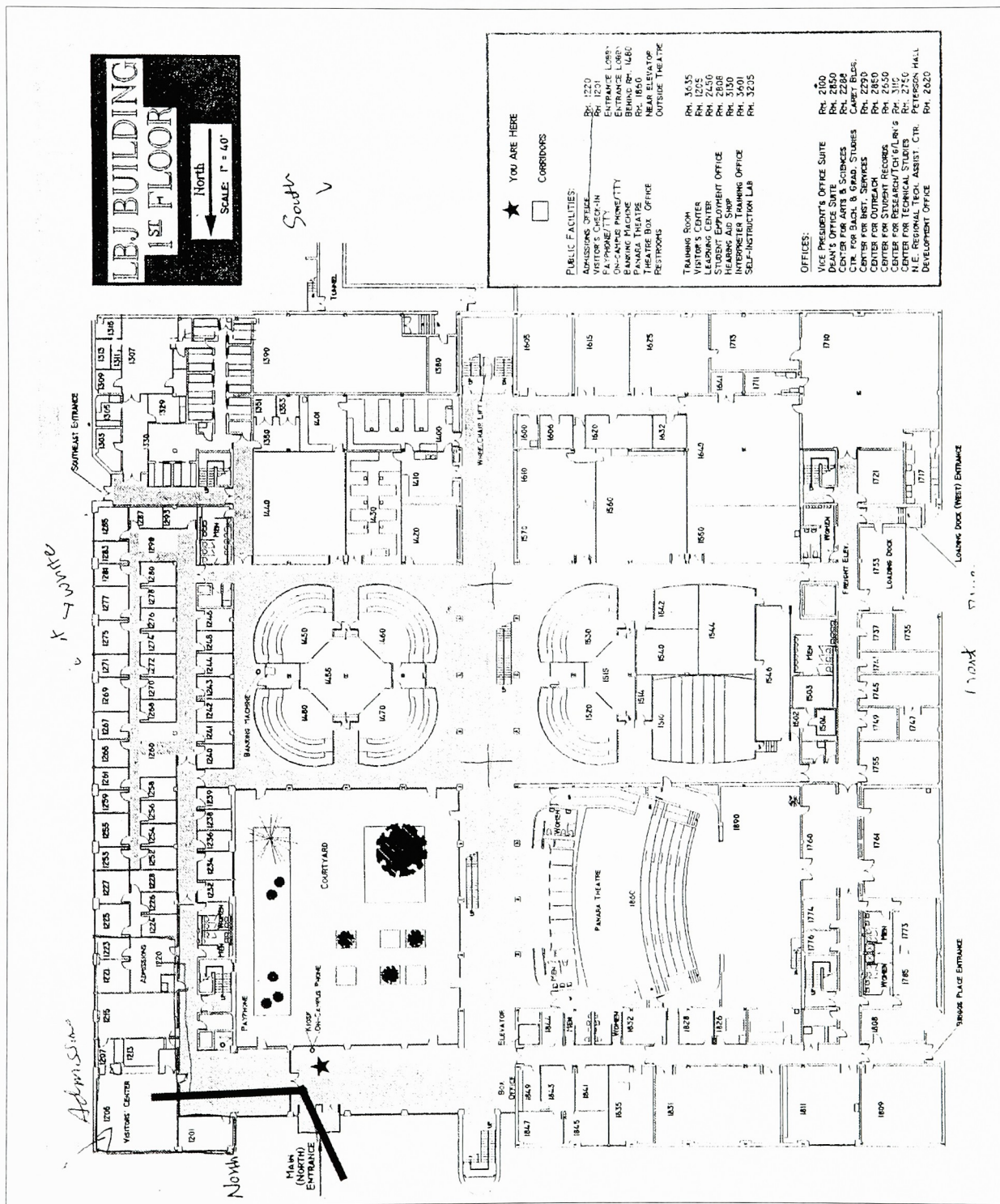
student

Location of your office or classroom(frequently using place): Administration

LBJ/1200

Appendix 1

Survey questionnaire 2-2



Appendix 1

Survey questionnaire 3-1

Hello. My name is JinHee Kwon from Grad Graphic Design.
My thesis topic is a wayfinding system for the NTID Building.

Therefore, I'd like to have some information about your paths to work or classrooms from particular entrances and exits.

Can you use different color markers for your daily routes in "map" templates?

Thank you for your help.

Name :

Your position: faculty

staff

student

Location of your office or classroom(frequently using place):

NLC

Hearing Aid Shop

Employment office

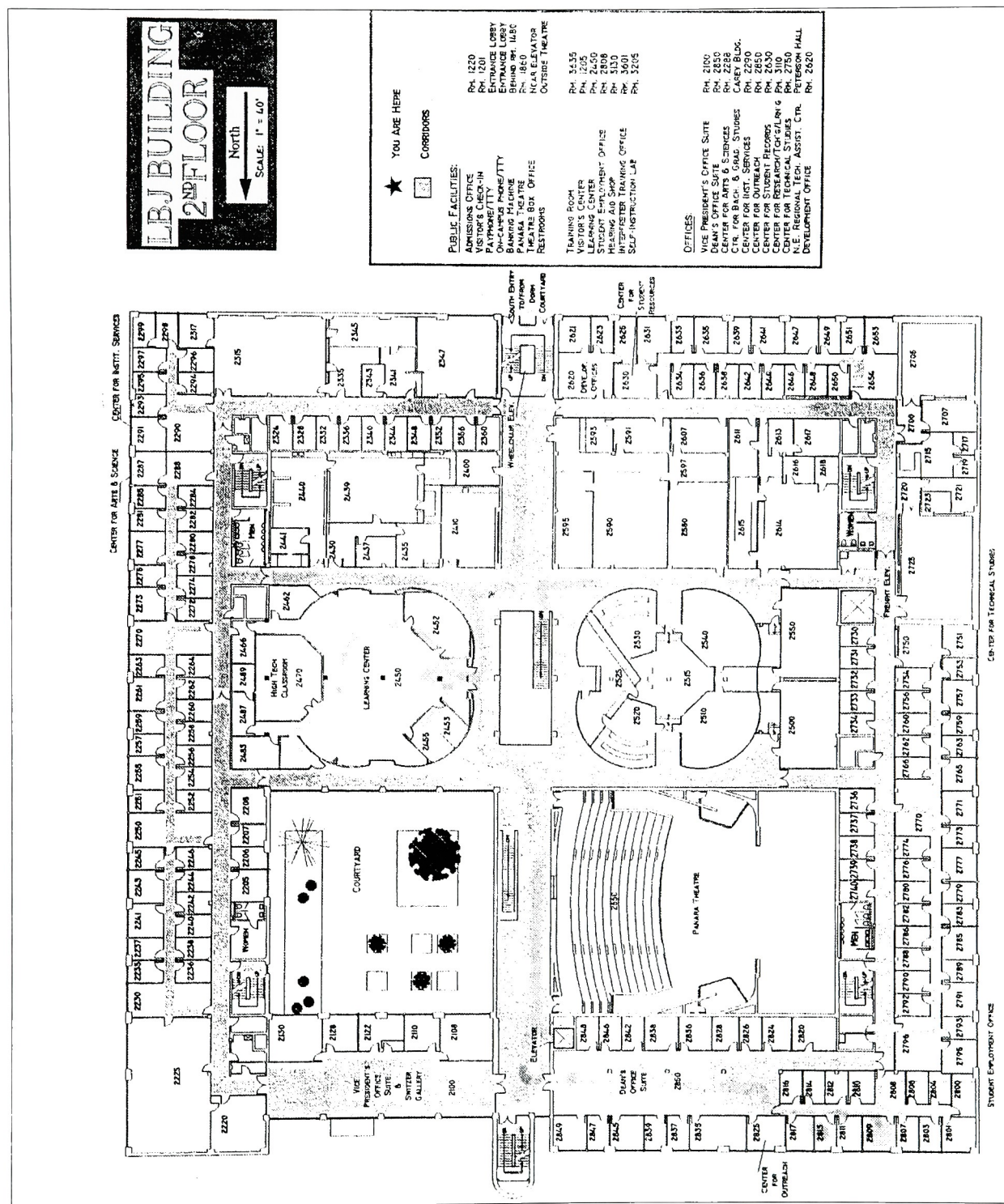
ATM BANK MACHINE

RESTROOM

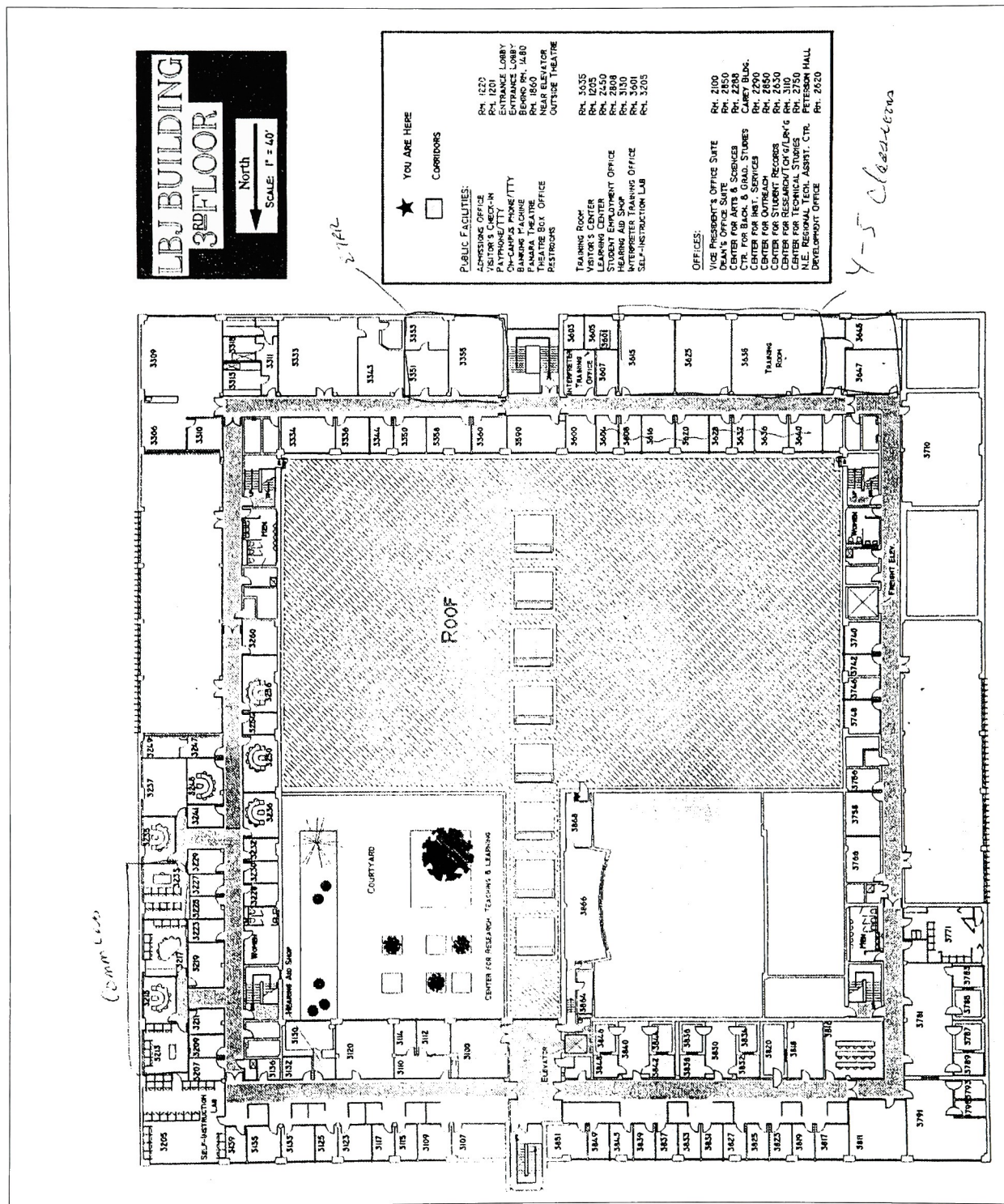
VENDING MACHINE (3RD FLOOR) & orange highlighter



Survey questionnaire 3–3



Survey questionnaire 3-4



Appendix 1

Survey questionnaire 4-1

Hello. My name is JinHee Kwon from Grad Graphic Design.
My thesis topic is a wayfinding system for the NTID Building.

Therefore, I'd like to have some information about your paths to work or classrooms from particular entrances and exits.

Can you use different color markers for your daily routes in "map" templates?

Thank you for your help.

Name :

Your position: faculty

staff

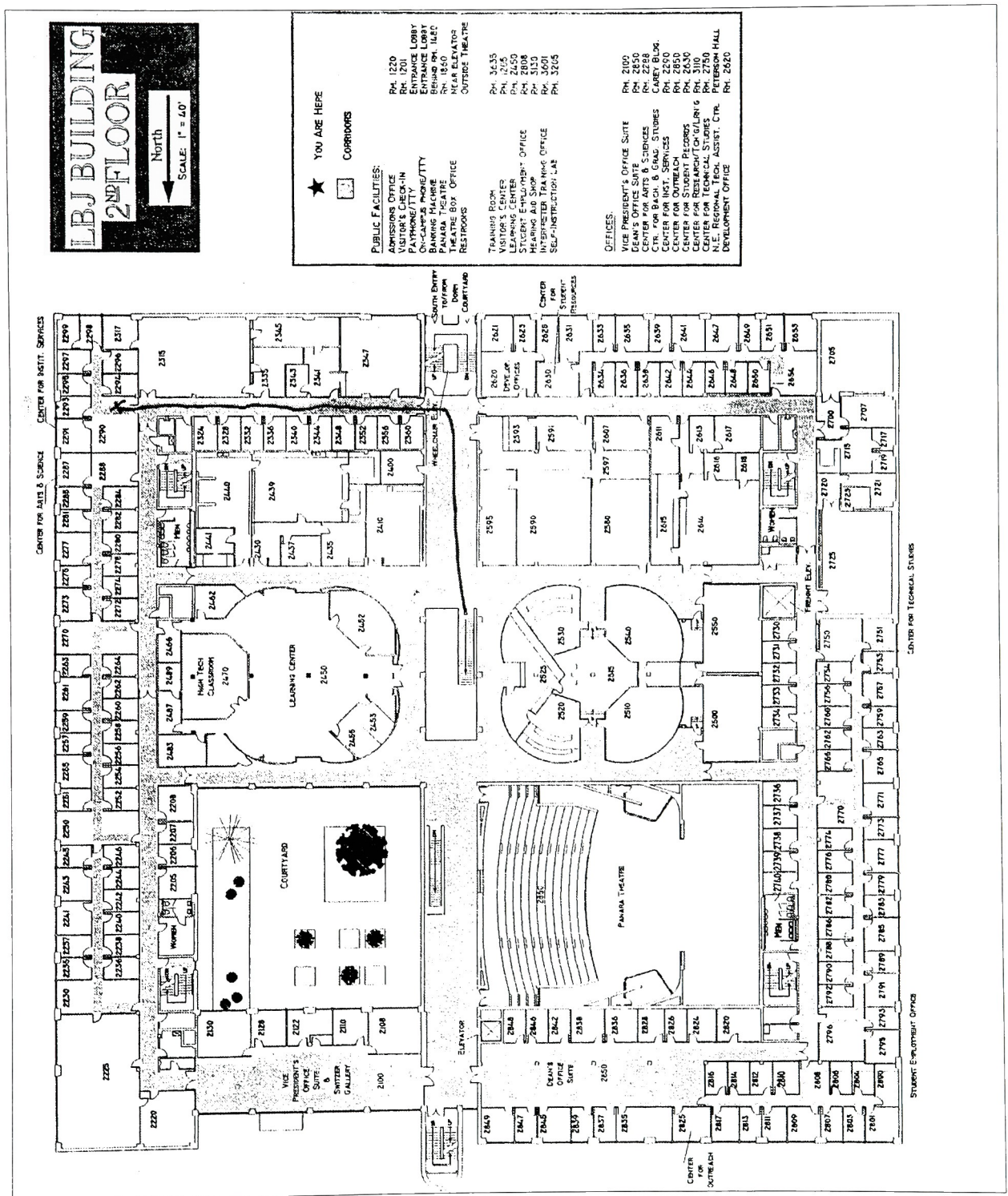
student

Location of your office or classroom(frequently using place):

Center for
Inst. Resource



Survey questionnaire 4-3




Appendix 2

Color consideration is based on "The Basis of Color Study"(reference: *Basic Visual Concepts and Principles* by Charles Wallschlaeger and Cynthia Busic-Snyder) and a color comparison is developed.

Color diagram reference: Basic Visual Concepts and Principles


Monochromatic Harmony



National Technical Institute for the Deaf

South Entry


Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry


Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry


Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed

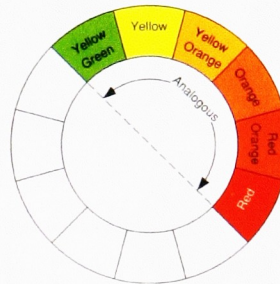
Analogous Harmony



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



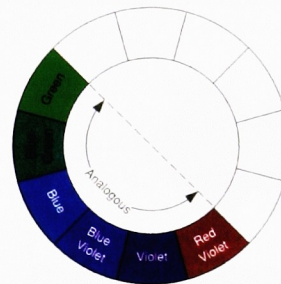
8.63a



National Technical Institute for the Deaf

South Entry

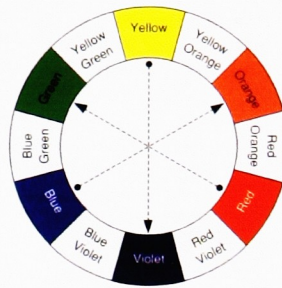
Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



8.63b

Appendix 2

Complementary Color Harmony



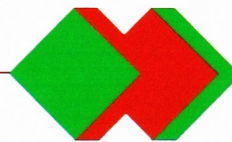
8.68a



National Technical Institute for the Deaf

South Entry

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	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry

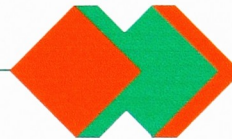
Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed

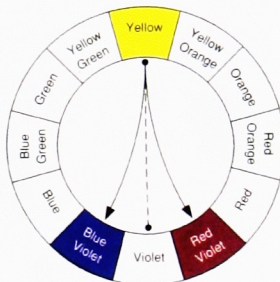
Split Color Harmony



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



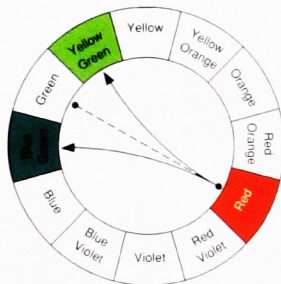
8.71b



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



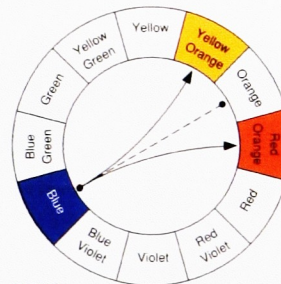
8.71c



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



8.71d

Appendix 2

Split Color Harmony



National Technical Institute for the Deaf

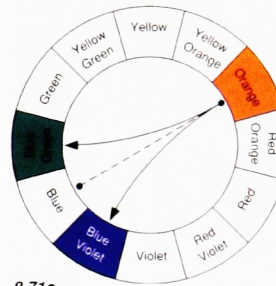
South Entry

Regular M-F 6:00AM-12:00AM

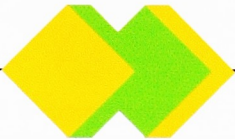
S-S Closed

Break M-F 6:00AM-9:00PM

S-S Closed



8.71e



National Technical Institute for the Deaf

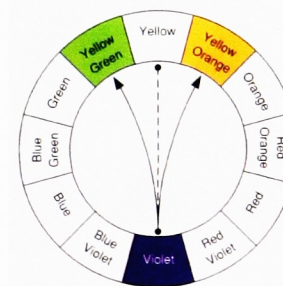
South Entry

Regular M-F 6:00AM-12:00AM

S-S Closed

Break M-F 6:00AM-9:00PM

S-S Closed



8.71f



National Technical Institute for the Deaf

South Entry

Regular M-F 6:00AM-12:00AM

S-S Closed

Break M-F 6:00AM-9:00PM

S-S Closed



8.71g

Appendix 2

Triad Harmony



National Technical Institute for the Deaf

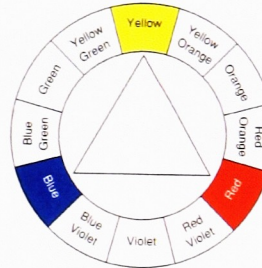
South Entry

Regular M-F 6:00AM-12:00AM

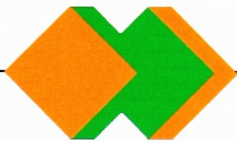
S-S Closed

Break M-F 6:00AM-9:00PM

S-S Closed



8.74a



National Technical Institute for the Deaf

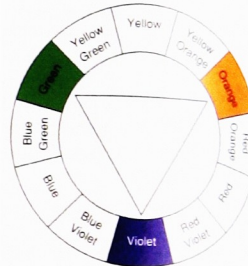
South Entry

Regular M-F 6:00AM-12:00AM

S-S Closed

Break M-F 6:00AM-9:00PM

S-S Closed



8.74b



National Technical Institute for the Deaf

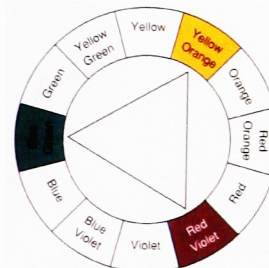
South Entry

Regular M-F 6:00AM-12:00AM

S-S Closed

Break M-F 6:00AM-9:00PM

S-S Closed



8.74c

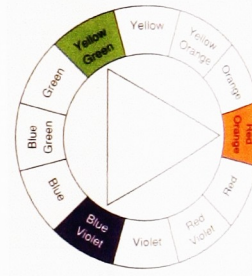
Triad Harmony



National Technical Institute for the Deaf

South Entry

Regular	M-F 6:00AM-12:00AM
	S-S Closed
Break	M-F 6:00AM-9:00PM
	S-S Closed



Appendix 3

This specific anatomy is referenced in *Wayfinding: People, Signs, and Architecture* (Paul Arthur and Romedi Passini)

The classification explains which area needs what information and of what type.

Classification of Graphic Information

Building zone	Building component	Information needed	Information type
1 Entrance to the Building	1 North Entrance: (main entrance)	Identification of the building by name and of the federal preference therein; identification of major departments or tenants; identification of accessibility for the mobility impaired or directions to nearest accessible entranceway	Orientation and general information about the setting <ul style="list-style-type: none"> • building directories • maps, floor plans, exploded view, and models...
	2 Southeast Entrance	Repeat of building name; hours-of- service information	
	3 South Entrance (secondary entrance)	Identification of the building by name and of the federal preference therein; identification of major departments or tenants; identification of accessibility for the mobility impaired or directions to nearest accessible entranceway	
	4 West Entrance: (loading dock)	Repeat of building name; hours-of- service information	
2 Main Lobby	1 Inside main entrance door	Information, reliably located, for the blind and for vision impaired visitors, Immediate apparent availability of reliable visual information	Orientation and general information about the setting <ul style="list-style-type: none"> • building directories • maps, floor plans, exploded view, and models... + Directional information to destinations <ul style="list-style-type: none"> • signs with arrow or plain language description involving the use of building features or landmarks. • floor directories in elevator lobbies • colored lines on walls or ceiling leading to destination zone
	2 Manned reception or information desk	General information, orientation, and directions; directions to elevators, if they are not visible from the desk	
	3 Information center	General information, orientation, and directions; directions to elevators, if they are not visible from the desk	

(continued)

Classification of Graphic Information (continued)

3	Communal facilities	1 Toilet door	Identification of gender; identification of accessibility; directions thereto if doors to these facilities are not visible from corridors	<ul style="list-style-type: none"> Identification of destination signs with name or pictograph at entrance or destinations. signs identifying local hazard sometimes safety colors will help to identify equipment
		2 Other communal facilities	Identification of entranceway; hours-of-service information	
4	Department offices, tenants in the Building	1 Entranceway, generally	Identification of department/ tenant name and suite number; hours-of-service information	<ul style="list-style-type: none"> Directional information to destinations + Identification of destination signs with name or pictograph at entrance or destinations. signs identifying local hazard sometimes safety colors will help to identify equipment
		2 Office doors or adjacent wall areas	Identification of office and/or function and/or occupant(s); Identification of suite number	

Classification of Graphic information: The Three Circulation systems

Building zone circulation system	Building component	Information need	Information type
5 Vertical Circulation system	1 Main elevator lobby 1st floor	Identification of levels of the building served by individual elevator banks; ability to summon elevator and to determine direction of travel by departing car; level identification on both door jambs of each elevator.	<ul style="list-style-type: none"> Identification of destination signs with name or pictograph at entrance or destinations. signs identifying local hazard sometimes safety colors will help to identify equipment + Directional information to destinations signs with arrow or plain language description involving the use of building features or landmarks. floor directories in elevator lobbies colored lines on walls or ceiling leading to destination zone
	2 Elevator lobby other floors	Ability to summon elevator and to determine direction of travel of arriving car; level identification on both door jambs of each elevator; directional information to offices/ tenants with identification of their suite number, emergency information with directions to nearest stairwell	
	3 Stairwell doors in corridors or walls adjacent thereto	Identification of level; emergency information about cross-over floors	

(continued)

Classification of Graphic information: The Three Circulation systems (continued)

	4	Doors to adjacent walls on stairwell landings inside stairwells	Identification of stairs with assigned number; if any emergency information about cross-over floors	
	5	Stairs, treads and handrails	Identification of top and bottom treads; identification of handrail	
	6	Ramps	Identification of accessibility for the mobility impaired	
6	Horizontal circulation system	1	Corridor intersection	directional information
		2	Corridor	reinforcement of the above in extra-long corridors
		3	Entrance to restricted areas or the wall areas adjacent thereto	If door is locked, no information is required other than the suite number; if door is unlocked, identification of the potential hazard involved is necessary; identification of the suite number
				Directional information to destinations + Identification of destination • signs with name or pictograph at entrance or destinations. • signs identifying local hazard • sometimes safety colors will help to identify equipment
7	Egress	1	Throughout the building as necessary	Emergency information; exit identification
				Identification of destination

Reference

Paul Arthur and Romedi Passini. *Wayfinding: People, Signs, and Architecture*. New York: McGraw-Hill, Inc., 1992.

Evaluation Questionnaire 1

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) +3 (+2) +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NIID signage?

(clear) +3 (+2) +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) +3 (+2) +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

How do the different color applications come into play?
On the posters I think the titles of each step should be clearer & more dominant than the number of the step.

Evaluation Questionnaire 2

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

clean, up-to-date

3. Do you think the design application (signage design) is clearer than the existed the NTID signage?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

Much improved!

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

solution

for long names

include first
names

Deaf students in CIAS
use first names frequently
Women's last names change
often.

Evaluation Questionnaire 3

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NTID signage?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

It would be more effective
to see a real 3D sign to some
"it would be in reality"

Evaluation Questionnaire 4

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NTID signage ?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design))
appropriately address the wayfinding system?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

healthy goal

Evaluation Questionnaire 5

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NTID signage ?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

Evaluation Questionnaire 6

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NTID signage ?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

Evaluation Questionnaire 7

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NTID signage?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) +3 +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

JinHee Kwon

The Process of Wayfinding

Evaluation Questionnaire

1. Do you understand what a wayfinding system is about?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

2. Do you think this wayfinding system solution is successful?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

3. Do you think the design application (signage design) is clearer than the existed the NTID signage?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

4. Do you feel that this design application (signage design) appropriately address the wayfinding system?

(clear) (+3) +2 +1 0 -1 -2 -3 (not at all)

5. How do you think this design application could be improved?

feel free to write on the back

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