

CORNELL UNIVERSITY LIBRARY SIGNAGE

DEA 470: Applied Ergonomics

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Introduction

- 1 Wayfinding**
- 2 Identification Signage**
- 3 Instructional Signage**
- 4 Emergency Signage**
- 5 Decision Nodes and Path Complexity**



1 Wayfinding

2 Instructional Signage

3 Identification Signage

4 Emergency Signage

5 Decision Nodes and Path Complexity

Wayfinding Signs

Wayfinding...

- Means knowing where you are, your destination, following the best route, recognizing your destination, and finding your way back out
- Principles for effective wayfinding include:
 1. **Differentiate regions** through differing visual character, while giving locations within a region a similar identity
 2. Provide signs at **decision points** to guide the user to their final destination
 3. Use **landmarks** to provide orientation cues and to indicate locations
 4. Create well-structured **paths** using sight lines to show what's ahead
 5. Don't give the user too many choices at one decision point
 6. Use survey views (give navigators a vista or map)



Remember ...

- **Location, location, location!**
- **Consistency is key**
- **Less is more**

Wayfinding Signs

Wayfinding tools include:

- Arrows and symbols
- Differentiation of basic sign types
- Sign Hierarchy

Arrows & Symbols

1. **Consistency**, in placement and size, is important to the legibility and success of your sign program
2. **Symbol signs** are much more effective when **incorporated** as an integral part of the overall program, and are required to accompany public facilities signing (i.e. toilet rooms), security signs (i.e. no admittance) and accessible entries and facilities (i.e. accessible ramps and entry doors)



3	
Public Buildings Service	→
Property Management Division	
Building Services Branch	3408
Repair and Alteration Branch	3508
Safety and Environmental Branch	3208
Facilities Service Center	1308
Safety and Environmental Branch	
Federal Supply Service	←
Assistant Regional Manager	
Property Management Division	5408
Sales Section	5508
Fleet Management Division	5508
Transportation Branch	5608
General Procurement Branch	5608
Contract Management Division	5708
Product Acquisition	5708

Placement & size

Wayfinding Signs

Differentiation of Basic Sign Types






- This helps people to navigate throughout the building by **following a series of sign types** that eventually lead the user to their destination
- By strategically choosing and placing these sign types, information and direction are provided in the most useful and timely manner
- There are primary, secondary, supporting, destination, and branding/logo signs
- Signs can also be categorized into
 - Identification
 - Reinforcement
 - Orientation
 - Destination

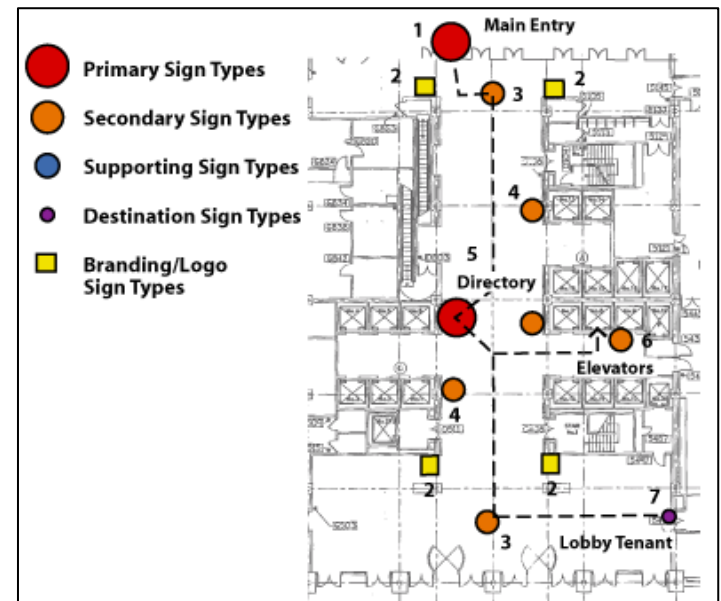


Sign Types

Wayfinding Signs

Basic Sign Types: Identification, Reinforcement, Orientation, Destination

1. Identification/entry signage – Exterior 
2. Reinforce arrival - Logos, flags 
3. Reinforce arrival - Security desk 
4. Orientation - Elevator floor range numbers/lobby services directional 
5. Orientation - Lobby directory 
6. Destination signage - elevators for an upper floor
7. Destination signage - specialty signage identifying a lobby tenant



Sign Types

Wayfinding Signs

Sign Hierarchy

There are two types of hierarchy:

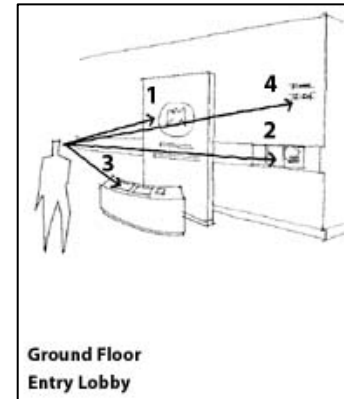
1. Among signs
2. Within a sign

1. Among Signs

- Identify appropriate location and type of each sign
- Identify appropriate hierarchy and scale of each sign
 - Signs of equal size or emphasis do not distinguish the different messages - the user will not know where to find the most important information
 - You should emphasize certain sign messages through type size, typestyle or background color

2. Within an individual sign,

- Information should be “layered” to improve legibility and help users make decisions faster and more accurately



Sign Hierarchy

Wayfinding Signs

ADA Wayfinding Sign Requirements

Tactile Characters:

- Raised 1/32"
- Accompanied by Grade 2 braille

Typestyles:

- Upper case & sans serif
- Width-to-height ratio between 3:5 and 1:1
- Stroke width-to-height ratio between 1:5 and 1:10

Character height:

- Tactile ADA characters at least 5/8" high, but no higher than 2"
- Minimum 3" high
- Sized to viewing distance

Pictograms:

- Text equivalent directly below
- Text outside of background area
- Background area 6" high

Finish/Contrast of Characters/Background:

- Eggshell, or matte non-glare finish 70% contrast between backgrounds

Placement:

- On wall next to latch side of door
- Avoids swinging doors- if door opens out, the horizontal center of the sign must be placed 9" from the edge
- Avoids protruding objects
- 60" from floor to sign centerline
- Minimum 80" clearance from floor

1 Wayfinding

2 **Identification Signage**

3 Instructional Signage

4 Emergency Signage

5 Decision Nodes and Path Complexity

Identification Signage

- Sign legibility is extremely important because users rely on identification to navigate the library.
- Includes signs that identify individual areas and rooms, as well as signs that identify the objects and applications found in these rooms.
 - Examples include restroom signs, signs designating a computer research area as well as those computers available for e-mail.

Within the Library

- Include:
 - Work desk signs
 - Café, food & drink, and vending signs
 - Room identification signs
 - Shelf identification signs
 - Computer workstation signs, availability of printers, e-mail, internet, etc.
 - Area signs for other resources (photocopies)

Considerations

- Legibility
- Color/Shape of sign
- Finish
- Contrast
- Fonts
- Braille
- Pictogram Usage

Sign Legibility Rules

- All signs should be able to be seen immediately upon entry of building.
- There should be no obstructions between the signs and the users point of view.
- ANSI sign standards uses the ratio of 25 feet per inch of text to guarantee readability.

Sign Legibility and ANSI Recommendations

Electromark Leading Source for Utility Marking Products

Home Shopping Cart My Designs My Account

Guide to Sign Legibility

The ANSI Z535.2 sign standard uses a ratio of 25 feet of viewing distance per inch of text height, assuming favorable viewing conditions.

For unfavorable viewing conditions, this ratio lowers to 12.5 feet of viewing distance per inch of text height.

For more optimistic traffic sign 'rule-of-thumb' is 50 feet per inch of text height.

The safe viewing distance for a sign must be determined in your environment. Legibility depends upon many factors, including lighting, type font and visual acuity. Other factors to consider in choosing your sign size include the complexity of the message, the reaction times necessary to avoid to hazard and the likely viewing angle of the sign. In the example above, a larger sign may be required if the person is moving or approaches the sign from an angle. In many cases, it is better to use multiple smaller signs that are strategically positioned than just a single large sign.

For Illustration Only

Olin Library Legibility

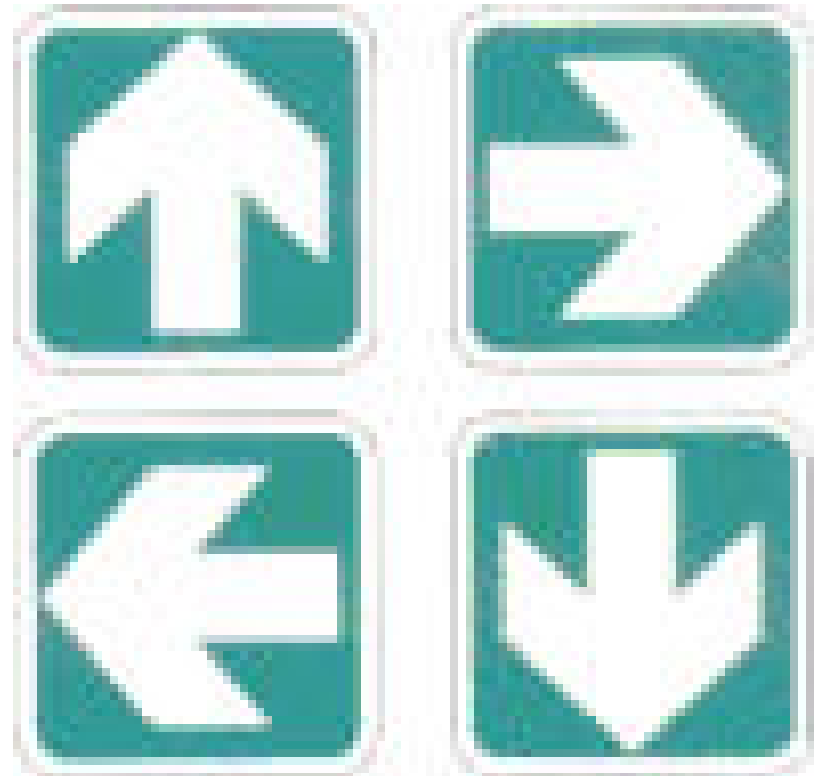
- Measured distances from:
 - Second door to first overhead sign (15 feet)
 - To information desk (28 feet)
 - To circulation desk and Kroch sign (46 feet)
 - Total from second door to Reference desk info. Sign (89 feet)
 - Optimally this sign would have a font size of 3.5 to 4 inches (3.56 inches exactly)
- Overall, good sign legibility and font size in Olin Library

Uris Library Legibility

- Security Desk: unidentified to users
 - Unknown purpose
- Circulation Desk: new signage needed
 - Identification sign blocked by users
 - Low contrast, fading, peeling
 - Small font size
 - Options include creating boundary lines to stop blockage or to place additional signage in front of line.

Color and Shape

- Color
 - Blue or green for advisory or information
- Shape
 - Square or rectangle for advisory or information



Identification Signage

Finish

- According to the ADA, characters must have eggshell, matte or non glare finish
- Notice the “dull” appearance of the first accessible entrance sign
- For Easier readability avoid signs with shiny or gloss finish (including metal, glass, and stone finishes)

Finish and Contrast



Light characters on a dark background



Light characters on a light background

Identification Signage

Contrast

- According to ADA, characters must contrast with background by at least 70%
- Color value and contrast calculators available online (example shown below).

The image shows a screenshot of an online Light Reflectance Value (LRV) calculator. The interface is titled "asi> modulex. LIGHT REFLECTANCE VALUE CALCULATOR". It features a "TEXT" tab and a "BACKGROUND" tab. The "TEXT" tab is active, showing a color selection tool with "ASI STANDARD COLORS" and "MODULEX STANDARD COLORS" palettes. A yellow color is selected, labeled "Lemon: SC-400". The main area has a black box with the text "Enter Text Here". Below this, there are input fields for "TEXT COLOR" (black) and "BACKGROUND COLOR" (black). To the right, the "LRV CONTRAST" is displayed as a percentage sign (%). A note at the bottom states: "A contrast between text and background of 70% or above is recommended for greatest legibility."

Identification Signage

Fonts

- Must use a sans serif or simple serif font
- Characters should be in title case if containing mixed information or all upper case if used as a title or headline.
- For room signs the font should be no less the 5/8" high and no more than 2" high
- Refer to sign legibility system shown earlier



Identification Signage

ADA Quality Evaluation Table

ADA Characteristics	Permanent Room	Directional	Overhead	Projecting	Temporary	Directories
Finish	Y	Y	Y	Y	N	N
Contrast	Y	Y	Y	Y	N	N
Tactile	Y	N	N	N	N	N
Grade 2 Braille	Y	N	N	N	N	N
Case	U/C	U/C &/or L/C	U/C &/or L/C	U/C &/or L/C	N	N
Character Height Min - Max	5/8" - 2"	Table 2	3" min.	3" min.	N	N
Character Width	Y	Y	Y	Y	N	N
Line Spacing	Y	Y	N	N	N	N
Character Spacing	Y	Y	N	N	N	N
Stroke Thickness	Y	Y	N	N	N	N
Mounting	48 - 60" from copy baseline to floor. See Fig. B	40" minimum from copy baseline to floor	Minimum 80" clearance. Fig. C	Minimum 80" clearance. Fig. C	N	N

Y = Required; N = Not Required

Current Library Signage

Map Collection

This sign has:

- Good distance legibility
- The correct color and shape for identification signage
- The correct finish
- Good contrast
- The correct viewing font size

Identification Signage

Braille Usage

- Room signs should use grade 2 Braille
- Should also have raised characters of at least 1/32"
- ADA does not require Braille on inserts, however should be used whenever possible to aid handicapped users.



Pictogram Usage

- Cornell's campus is very diverse: signs should be pictorial and as universal as possible
- This allows the signs to be independent of language barriers



Identification Signage

Pictogram Usage

- Although optional, pictograms must be at least 6" high if used
- The equivalent verbal description should be placed directly below it, along with Grade 2 Braille.

Use Large Pictograms



On the sign, there should be at least a 6" x 6" area for the pictogram (symbol) with no graphic elements or text within the area.

























Pictogram Specifics

- Solid shapes, not outlines
- Closed, simple, and unified boundaries
- Left/right symmetrical if possible
- Similar height and width
- Permit reversal (especially with directional)
- Placed in enclosures (preferred square or diamond)



Identification Signage

Examples of Universal Identification Pictograms

Fire Extinguisher	 	Telephone	 	First Aid	 
Litter Disposal	 	Information	 	Elevator	 
Restaurant	 	Lost and Found	 	Toilets	 
Coffeeshop	 	Stairs	 	Drinking Fountain	 

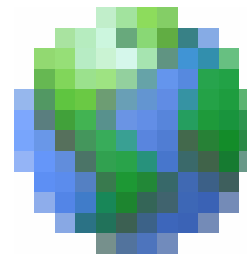
Universal Disability Signage

- 54 million citizens with disabilities
- ADA provides pictogram icons that are universally accepted and should be used when possible.



Application of Pictograms

- These wall signs are examples of effective signs because they use symbols, text, and Braille.
- Substitutions may have to be made for services that don't yet have international symbols (internet and e-mail)



1 Wayfinding

2 Identification Signage

3 **Instructional Signage**

4 Emergency Signage

5 Decision Nodes and Path Complexity

Instructional Signage

- Signage that describes behaviors, rules, or multistage tasks to the user.
- It informs students how to act in certain areas, what to expect, and where to go.

Within the Library

- Includes:
 - Cell phone areas
 - Talking/No talking areas
 - Rules
 - Hours
 - Restrictions
 - Guidelines (where to find printers, etc)

Considerations

- Legibility, Contrast, and Fonts
- Color
- Pictogram Usage
- Simplification
- Avoid Mixing Instructional with Identification Signage

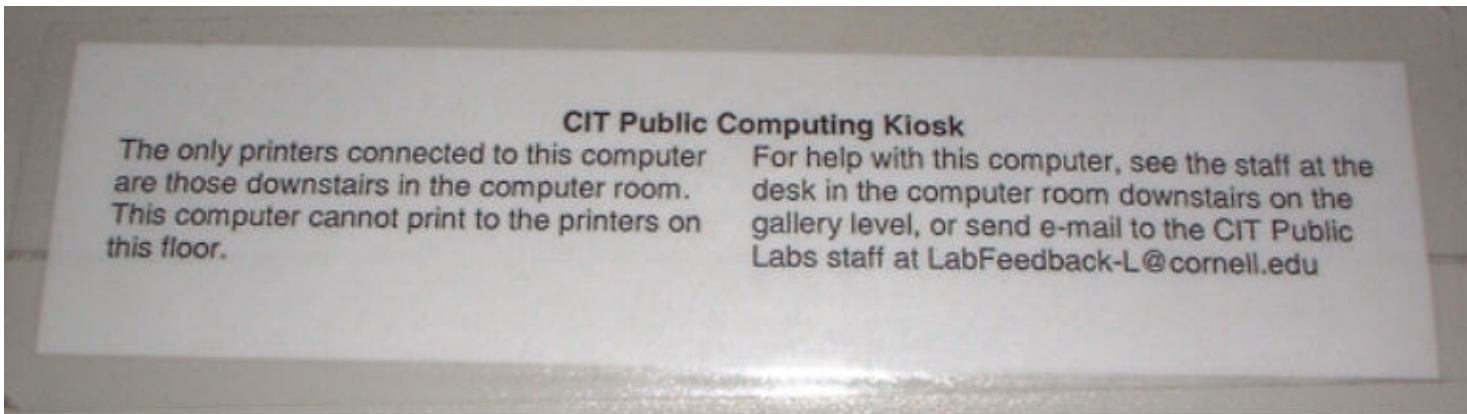
Legibility, Contrast, and Fonts

- The same principles of these characteristics in identification signs apply for instructional signs as well:
 - Follow the ratio to determine font height for legibility
 - Have at least 70% contrast
 - Use a sans serif, solid font with proper use of uppercase or lowercase














Cornell Library Legibility

- Printer instructional signage:
 - Improved placement to warn users beforehand
 - Increased font size and high contrast color combination to get user's attention
 - More concise, possible use of symbols



Color Characteristics

- This chart indicates the color associated with each type of sign along with their instructional meaning

<u>Type of Sign</u>	<u>Colours Used</u>	<u>Instruction</u>
Prohibition	  	You must not / Do not do / Stop
Mandatory	 	You must do / Carry out the action given by the sign
Warning	 	Caution / Hazard ahead / Risk of danger
Safe Condition	 	The safe way / Where to go in an emergency
Fire Equipment	 	To indicate fire equipment

Pictogram Usage

- Again, similar rules apply to Instructional pictograms as did to identification pictograms
 - Try to use universal symbols
 - Appropriate height of at least 6 inches
 - Solid symbols in enclosures



Instructional Signage

Simplification

- Use less colors to aid in hierarchy of information
- Use universal pictograms and restriction symbols
 - Will also reduce wordiness and make the sign more concise.

Current Periodicals and Newspapers Reading Room

Olin 101

This is a quiet research area

**Please no
cell phones,
laptops,
food or drinks**



Please go to Olin 116 for library cards and billing questions.

Please go to Olin 213 for faculty study, graduate carrel, and locker questions.

Instructional Signage

Avoid Mixing of Identification and Instructional Signs

- Use international symbols/icons
- Try to avoid conflicting messages. If prohibition signage, keep it simple.

This is a

Quiet

Research Area.

Cell phone use is restricted to:

- Libe Café
- Between Olin's entryway doors
- Areas marked "CELL PHONE ZONE"



Instructional Signage

Current Periodicals and Newspapers

Latest issues of newspapers and recent issues of selected journals

**This is a quiet reading area.
Please no laptops, cell phones,
food, or drink.**

All back issues of
newspapers are located
on Level B.


Magazine and journal
back issues are located in
the stacks and shelved by
call number.

- Separate restriction and identification messages into two separate signs
- Use universal symbols where possible
 - Reduce the amount of overall text

Instructional Signage

Possible Solutions to Reduce Mixing of Identification and Instructional Signage

- Allows for separation of information
- Insert picture or text
- Can insert all restrictions into one feature
- Easy to change and replace with dynamic library needs.



clearview

Clearview is an attractive, new frameless sign product with clear windows for changeable inserts. The inserts may be constructed of paper, card stock, or vinyl and are simple to remove. Ideal for customers wanting to make changes themselves using an in-house laser printer.

Features and Benefits

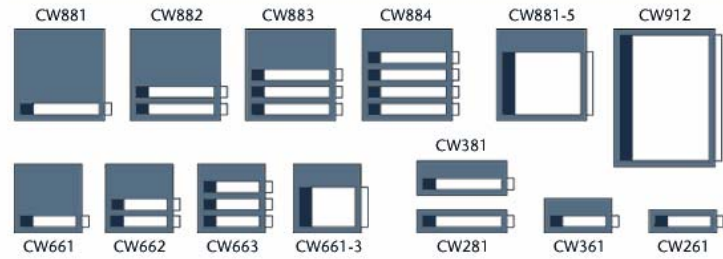
- Wide selection of slot quantities and material widths
- Square or radius corners
- Matte, non-glare finish
- ADA compatible
- Custom sizes available
- Inserts may be removed quickly and easily
- Inserts can be made at customer's site, i.e. laser printer

Typical Uses

- Hospitals
- Universities
- Office Complexes
- Stores
- Government Complexes

sign information chart

Sign Layouts



CW881 CW882 CW883 CW884 CW881-5 CW912

CW661 CW662 CW663 CW661-3 CW381 CW281 CW361 CW261

Instructional Signage

Additional Solutions

- Can use one column to identify room and features while use other for instructional behavior and rules
- Allows change
- Easily accessible and identifiable



A New Idea for Possible Library Signage

- Place signage outside rooms that have the room name/number as well as pictograms of available services and resources found inside (printers, computers, café, etc)
- In addition, have written and/or pictogram representations of the regulations of the room (hours, talking, cell phones, etc)



1 Wayfinding

2 Instructional Signage

3 Identification Signage

4 **Emergency Signage**

5 Decision Nodes and Path Complexity

Emergency Signage

- **Objective** - draw attention rapidly and unambiguously to objects and situations capable of causing specific hazards.
- There are three different **failure modes** for safety signs:
 1. **Poor Positioning**: the sign is placed in an obscured or inconspicuous area
 2. **Information**: the sign fails to convey information in a comprehensible manner
 3. **Risk level**: the sign fails to develop a proper appreciation of the hazard
- **Effective Emergency Signage** should ...
 1. Emphasize Action
 2. Use a Symbol
 3. Choose an Appropriate Heading
 4. Write in a Headline Style
 4. Describe Hazards and Consequences
 5. Provide Emergency Information



Emergency Signage

- ANSI Z535 standards defining proper format and content
- A safety sign is a visual alerting device, which advises the observer of a potential hazard
- The sign should be eye catching, and clearly convey the intended message
- “Safety signs may consist of a *signal word*, *message panel*, and/or a *symbol*.”
 - Signal words signify the degree of severity of an immediate hazard.
 - For uniformity, ANSI specifies certain colors for relative levels of risk.

Emergency Signage should ...

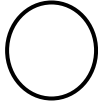



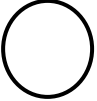

1. Be eye catching
2. Clearly convey message
3. Include: signal word, message panel and/or symbol

Emergency Signs



SIGNAL WORD	RISK LEVEL	BACKGROUND COLOR	FONT COLOR
Danger	<ul style="list-style-type: none">•Imminently hazardous situation which, if not avoided, will result in death or serious injury•Should be limited to the most extreme situations	RED	White
Warning	<ul style="list-style-type: none">•Potentially hazardous situations that could result in death or serious injury	ORANGE	Black
Caution	<ul style="list-style-type: none">•Potentially hazardous situation which, if not avoided, may result in minor or moderate injury•May also be used to alert against unsafe practices	YELLOW	Black
Safety	<ul style="list-style-type: none">•Identification of safety equipment, first aid, or emergency egress locations	GREEN	White
Notice	<ul style="list-style-type: none">•Safety information and notices	BLUE	White

Emergency Signs

SAFETY COLORS, SHAPES AND APPROPRIATE USES

Safety Color	Shape	Meaning or Purpose	Examples of Use
RED		Stop Prohibition	Stop signs Emergency shutdown devices Prohibition signs
		This color is also used to identify fire fighting equipment	
YELLOW		Caution Possible Danger	Identification of dangers (fire explosion, radiation, chemical hazards, etc.) Identification of steps, dangerous passages, obstacles,
GREEN		No danger First Aid	Identification of Emergency Routes and Emergency Exits Safety Showers First Aid Stations and Rescue Points
BLUE	 	Mandatory Signs Information	Obligation to wear individual safety equipment Location of Telephone

Emergency Signs

Signal Word	Indicates the risk level	Danger, Caution, Warning
Suggested Action	Give the observer instructions on how to avoid the hazard	Do Not Enter
Symbol	Provides a quick reinforcement of the danger or safety message. Also, symbols are universal, broadening the audience able to comprehend the message.	
Border	Used in addition to the symbol – Universal. Indicates how to act (i.e. Prohibition)	
Headline Style	Use direct commands rather than informative statements.	“Wear Hard Hats” is better than “Hard Hats are Required”
Mixed Case Lettering	Legibility is increased if the lettering is mixed case. All uppercase lettering is difficult to read from far distances, or in poor conditions.	
Letter Height	Signs should be the size which allows the first line of the message to be read from a sufficient distance to avoid the hazard.	*See legibility table.
Font/Background Contrast	A minimum contrast of 70% is recommended for all safety signs. Anything less may make the signs difficult to read in unfavorable conditions.	Contrast calculators available (http://www.asimodullex.com/servlet/doc)

Legibility Guidelines

- Legibility depends on lighting, angle, type font and visual acuity
- The ANSI sign standards are based on a ratio of letter height to reading distance
 - Good lighting conditions - ratio is 1 inch of letter height for the sign per 25 feet of viewing distance.
 - Under less than favorable conditions - the ratio drops to 1" for 11.9 feet.

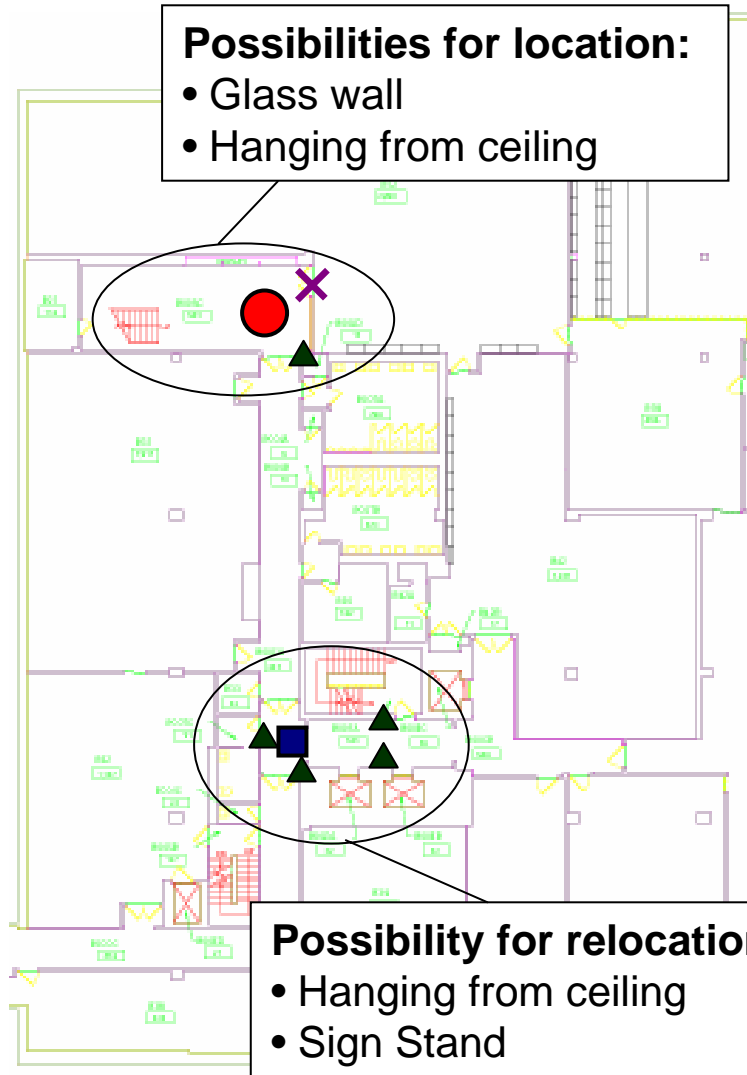
Capital Letter Height of Warning Text Size (inches)	Reading Distance (ft)	
	Good Conditions	Unfavorable Conditions
1.0	25.0	11.9
1.5	37.5	17.85
2.0	50.0	23.8
2.5	62.5	29.75
3.0	75.0	35.7

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Basement

Possibilities for location:

- Glass wall
- Hanging from ceiling



Possibility for relocation:

- Hanging from ceiling
- Sign Stand

Things to note:

- Destination signage can come before secondary signage
- Destination signage should be perpendicular to the wall
 - Bathrooms
 - Stairs and elevators
- Exit signage to assist exit wayfinding
- More emphasis needed on location of stacks

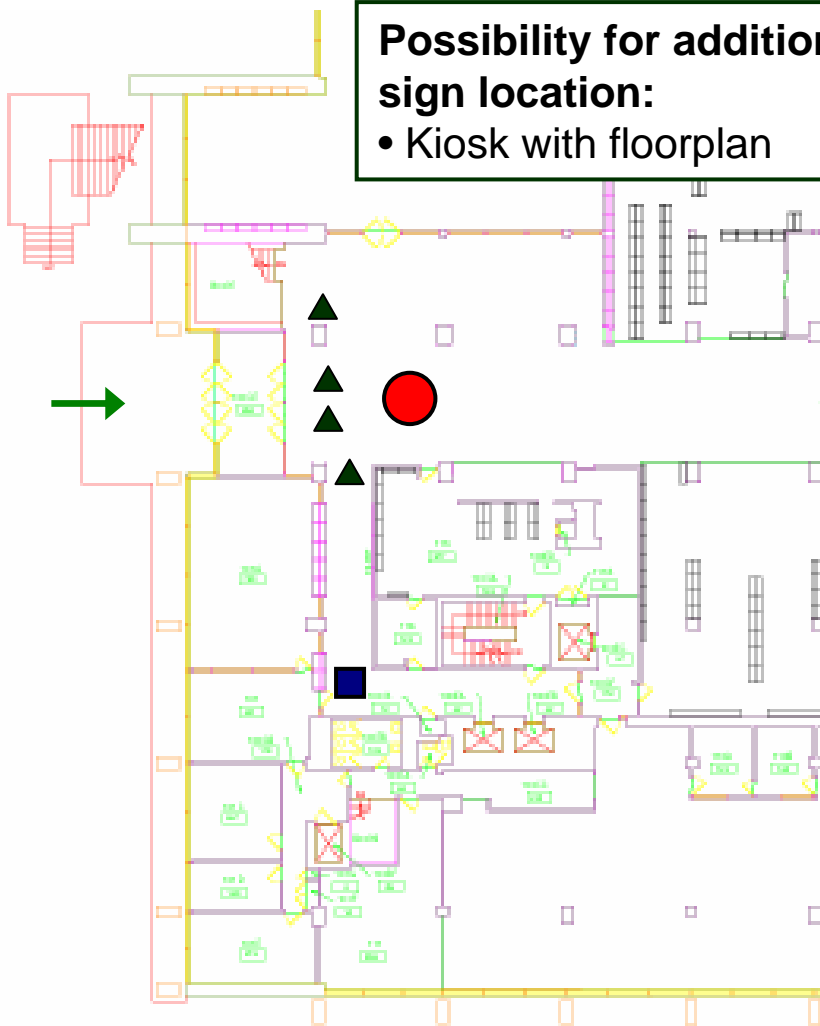
Key

- Primary Decision Node, Sign Needed
- Secondary Decision Node, Sign Needed
- ✕ Destination Sign Needed
- ▲ Existing Sign

First Floor

Possibility for additional sign location:

- Kiosk with floorplan



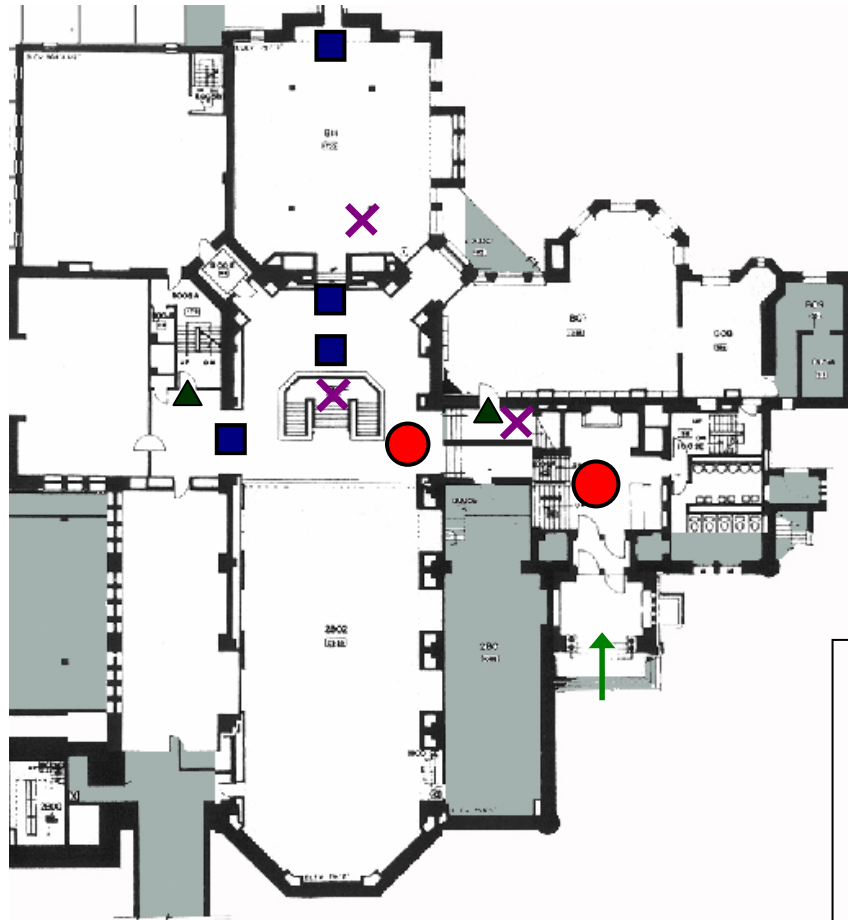
Things to note:

- Exit signage to assist exit wayfinding
- More emphasis on location of stacks

Key

- Primary Decision Node, Sign Needed
- Secondary Decision Node, Sign Needed
- ✕ Destination Sign Needed
- ▲ Existing Sign

Lower Level



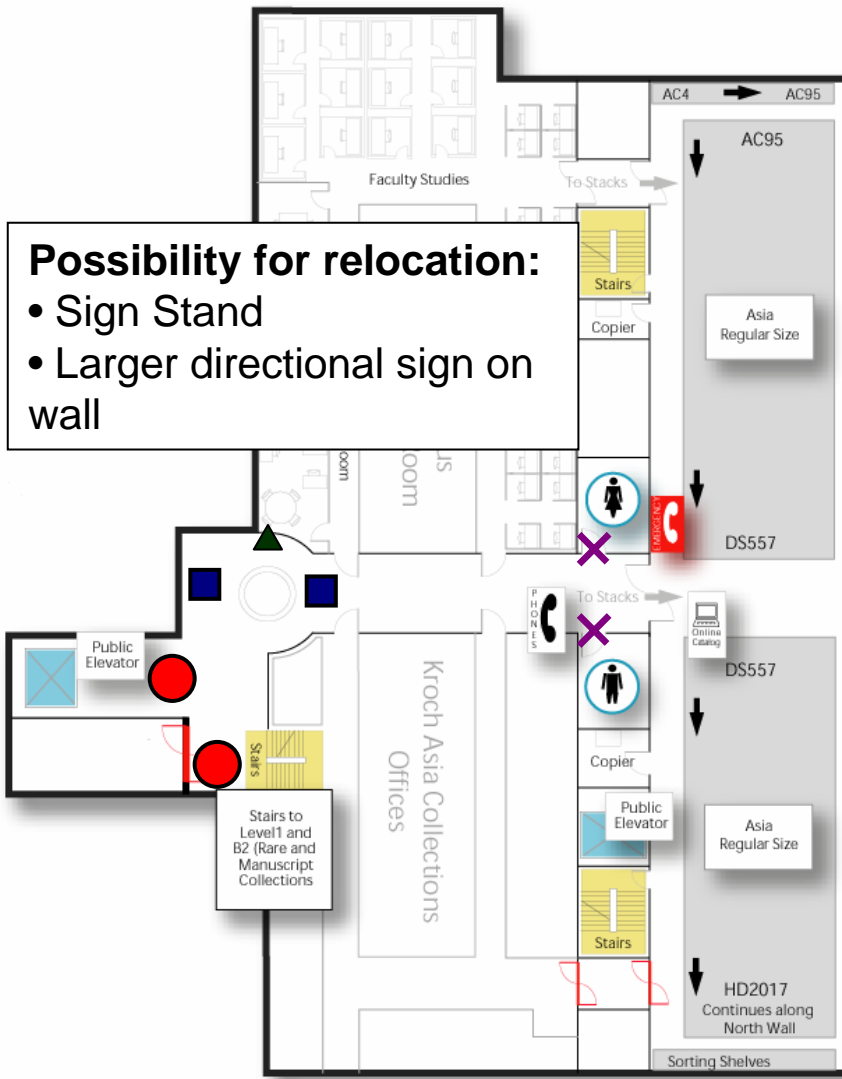
Things to note:

- Primary Sign at entrance should include floorplan
- Secondary signage should emphasize location of stacks
- Destination signage should be perpendicular to the wall
 - Bathrooms
 - Stairs and elevators
- Use exit signage to assist exit wayfinding

Key

- Primary Decision Node, Sign Needed
- Secondary Decision Node, Sign Needed
- ✕ Destination Sign Needed
- ▲ Existing Sign

B1



Possibility for relocation:

- Sign Stand
- Larger directional sign on wall

Key

- Primary Decision Node, Sign Needed
- Secondary Decision Node, Sign Needed
- ✕ Destination Sign Needed to Increase Visibility
- ▲ Existing Sign



Thank You!