

*Accessible Wayfinding and Signage*

AN ACTION PLAN



**ACCESS COMMUNICATIONS**

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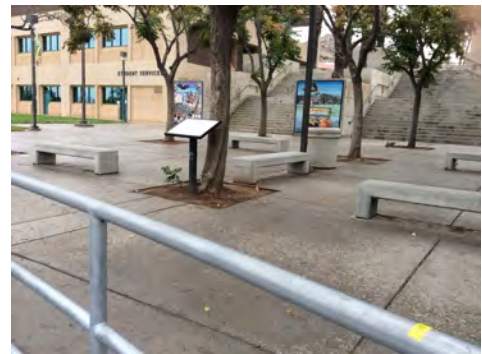
# Overview

## First Impressions



As we drove onto campus at the main entry point, our first impression was that signs were scattered everywhere. However, they were a collection of unrelated messages and destinations. There was no real cohesive plan to tell us where we should go to park, as campus visitors. There was a large sign with various destinations and arrows, but there were so many arrows, that the effect was confusing.

After parking and going to the main plaza in front of the staircase leading to the upper campus, we didn't see any sort of campus map. It turned out there was one, but it was very small, and so unobtrusive we hadn't noticed it. Although it was easy for me, a short person just on the outer boundaries of being a "Little Person" and with some vision problems, to see the map because it was angled, and low enough, it was in very bad condition, and crammed with a long list of destinations that were in very small print. The text and labels contrasted pretty well with the backgrounds, although that may have been a result of the basic green color fading, but the map itself was not designed in the most useful way. Normally, if you are going to include so much detail on a



directory, an alphabetical listing is more helpful, since the way this directory is organized, you have to know what building the destination is located in, before you can easily find it.



A more prominent upright sign was placed near the entrance to the plaza, but on close approach, it contained a poster listing various activities rather than giving information about the campus layout. Unfortunately, the typeface was decorative, so many of the entries were impossible to read. All general information of this type needs to be designed

in a manner that will make it accessible to the greatest number of students, including those with various forms of vision impairment and cognitive disability. Informational signs are also very important for students who are deaf or have hearing impairments, because their best access is through visual information.

The main staircase up to what appeared to be the entrances to the two main buildings, clearly labeled “Library” and “Student Services,” looked daunting. There was no indication of how someone using a wheelchair or with another mobility impairment would enter those buildings. The same was true of the staircase bisecting the building as you entered across from Parking Lot A.



After determining where the administrative offices seemed to be located, we got in the car again and drove to the Administrative Annex and parked in a lot marked “Student Permit Parking. There was no clear indication of what a visitor should do in order to park legally.

Our first impression, then, was that this is a campus that needs a cohesive wayfinding system. One system should give some clear direction to those who arrive by car and need to park as close as possible to their destination. Visitors should have a clear indication of how they can park legally.

The second system should tell those arriving by bus or other conveyance or by bicycle or on foot, how they can get to their destination in the most efficient way possible. If they use a wheelchair or scooter or are mobility impaired, they need to be informed of the accessible path of travel, or of alternatives that will allow them to get where they need to go.

Everyone, whether they have no disabilities at all, or are visually impaired, blind, deaf, hard of hearing or have some sort of cognitive impairment, should be able to rely on well-designed, easy-to-read uncluttered sign messages. The signs should be placed where they are easy to locate, and use a consistent set of symbols and terminology throughout the campus. The system should take advantage of the latest technology to provide individualized and accessible wayfinding to everyone who comes to the campus.



## Major Exterior Wayfinding Problems at Moreno Valley College



### **No adequate campus map system**

An adequate map system is absolutely basic to wayfinding information for any campus of this size and complexity. As mentioned above in the overview, the one map structure we saw was designed correctly, in that it was titled at an angle that made it easy to read for people of short stature, people using wheelchairs, and those with poor vision, but it was much too small, and was very unobtrusive. At the main entrance to the campus, the map should be very prominently displayed near where the bus discharges its passengers. Maps should then be placed around the campus, especially at the pedestrian exits or at the permit dispensing machines in each parking lot and in the upper plaza area.

Care should be taken in the design of the map and the accompanying directory to use high contrast colors, a non-glare cover, and easy to read type and symbols. The map we saw was oriented correctly. That is, it was oriented to the person who was viewing it. It is important that all campus maps, no matter where they are located, are oriented to the viewer, rather than to the compass directions.

This might be an ideal place to introduce technology similar to that used for the parking payment kiosks. A QR code could be added to each map, and could connect the person to a website they could access on their phone or tablet with a campus map and directory that is searchable and much more detailed than the displayed map. The college already has a website with an interactive map, as well as a copy of the map displayed at the campus entry. That map can be improved for the website, as well as for the map signs. Eventually, there are programs that could be added to direct people who are blind or visually impaired around the campus. Undoubtedly some of the information on the website can be accessed as audible messages now, but there are much more sophisticated systems available. However, adding the QR code and the website map and directory at this time should be simple and inexpensive to accomplish.

One of the reasons the map is difficult to read is because it is attempting to serve two rather different purposes: a wayfinding map to major campus destinations to be used by visitors and first time students and new staff members, and a complete directory to virtually every area of every building. For instance, the Parkside portables are named individually, right down to the restrooms, with some just called "classroom." This kind of detail is unnecessary in a campus wayfinding map. These maps should get you to the right building by listing only major destinations, and then directories within those buildings or areas should be more detailed. Another possibility would be to enlarge the sign structure and have a separate area devoted to a complete campus directory. The map should not include the map for the Ben Clark Training Center. Since that facility is in a completely different location, there is no purpose served by having it shown on the map of this campus, and it takes up valuable space.

To illustrate, in very schematic form, the type of system that provides a start to finish wayfinding experience, we are including an Appendix with such a system. As an experiment, we also alphabetized all the entries from the current map, eliminated those that were not major destinations, and assigned them to numbered buildings. Undoubtedly, even some of those entries could be eliminated and reserved for building directories, or the on-line directory that could be accessed with a QR code. As an example of our decision process, there doesn't seem to be any reason to list "science labs" as a separate item when it is quite clear that they would be found in the Science and Technology building. Classrooms are expected throughout the various academic buildings.



### **Diverting pedestrians to special destinations**

There are two destinations that deserve special attention, since they may be attracting non-students who come by bus or are dropped off by automobile. These individuals may save steps if they don't proceed all the way to the main entry point of the campus. The destinations are the dental education center and the child care center. New signs for the dental education center are particularly crucial, since it is more likely to attract one-time visitors, and it is in an isolated location away from the main campus.

Ironically, these two destinations have the least effective building identification signs on the entire campus. The dental education center is not marked at all on the sides of the building that the public is most apt to see, along the side that faces Lasselle Street. If



you are dropped off at the bus stop at the base of the entrance street to the college you would walk right past the steps that would take you up to the clinic without seeing it, and have to backtrack a substantial distance.

Someone walking toward the child care center might also find the most direct path if they did not proceed all the way up the entrance road, but would turn off toward the dental clinic, and then walk over to the child care center. Correctly placed directional signs would guide pedestrians more efficiently to these destinations, and would also divert vehicles to the closest drop off points and parking lots for



these visitors.



The identification sign on the child care center is placed very low on the building. A more prominent sign should be placed above the main entrance, where it could be seen from a distance by both pedestrians and those arriving by vehicle.

## Approaching the Campus

Depending on where you approach the main entry point to the campus you have different views and obstacles. If you park in Parking Lot A, or use the accessible path from the main circle, and then turn left to walk toward the main structure, you see a







large structure that appears to be made up of two equal wings that are a mirror image of each other, and bisected by a wide stairway leading to the main level. There doesn't appear to be any other entrance to the structure. An easily visible sign on the left

facade identifies the library. You expect a similar sign to the right of the staircase, but instead, it is located at the far right end of the building, identifying student services. This is the one clue you have that the entrances are not both located in the area at the top of the staircase.

It seems as if the most direct point to the library would be to park in Parking Lot A and walk directly toward the staircase. However, if you are unable to climb stairs, you will be confronted with a stairway just in order to get to the pathway leading to the library staircase. Therefore, you will have to turn right to get to the curb cut, and go to the central plaza entrance instead, and then use the walkway that leads leftward along the building to get to the elevator beneath the staircase.

Although there may be pedestrian visitors to the library who wonder how to enter other than by the staircase, this problem is fairly easily solved with a directional sign to the elevator that is hidden beneath the staircase. The major problem is just having to walk all the way to the central plaza area from Parking Lot A, and then back-track along the Student Services Building to get to the elevator.

The area beneath the staircase appears, on a gloomy day, to be very dark and unwelcoming. Even as you get to the area, the location of the elevator is not obvious. Improved lighting might help, in addition



to signs. It might even be possible to cover the walls beneath the building with some lighter material and add super-graphics that would aid in wayfinding while brightening the area.

### **Problems for pedestrians in accessing student services**

On the other hand, if you are dropped off at the circular entrance to the campus at the end of Campus Drive, what we think of as the lower plaza level, you see the monumental double staircase that leads up directly to the Student Services entrance. The question, for those with mobility problems is, “how do I get up there?” And, sadly, the answer is “you can’t.”

Access to the Student Services building, which is crucial for class registration and counseling, is made particularly difficult by the building architecture. There is no really efficient way for anyone with a mobility based disability to enter the building, and signage is badly needed to make up for the



shortcomings of the architecture. It seems as if the obvious design would have been to place the two major entrances from the second floor, or upper plaza level, opposite each other at the top of the large staircase leading to the library entrance and to have a walkway leading directly from the street or upper plaza to that staircase. However, the architect chose instead to move the student services entry to the other end of that wing, and have it accessed by the main double grand staircase. However, unlike the library staircase, there is no elevator beneath.

Undoubtedly, anyone who cannot use the stairs to the upper plaza level, and who comes to the campus as a pedestrian, has to travel much further than the allowed number of feet to access an elevator. This is an access problem which certainly can't

be solved by a sign. Although there may not have been any construction at that part of the campus since the advent of the ADA, it is a major barrier to access that does need both an interim and a final solution. However, a sign system is certainly a beginning, and seems long overdue.

Unfortunately for those with disabilities, not only is the elevator access to the second story many feet from the lower entry plaza, and hidden behind a staircase, but getting to the second level will get you to the library, but not to the student services center. The entry across from the main entrance to the library does have an entry door, but it has been reserved for staff only. (One possible temporary barrier removal might be to allow those with disabilities to enter the building through the staff entrance.)



The area across from the elevator also doesn't offer any entrance to the social services building, but is the location of the public restrooms. There is not a single sign directing to the main entrance of the social services building. In order to enter the student services center, you need to leave the area between the buildings, turn to the right, and

walk along the entire length of the building to get to the main entrance.

Those with disabilities who arrive by automobile have a much easier time of it. They can park in a special lot reserved for those with disabilities, and enter all areas of the campus fairly easily from there. There is also access from other parking lots, and a separate "stand alone" elevator to take them to the lower level should they have a class or meeting on that level. However, from that point on, they become pedestrians, with all the difficulties that entails on this campus.

## Directional and informational signs for autos

One of the design factors that is important for large directional signs is to minimize the number of messages on each sign, and make them as easy as possible to read quickly. The ADA rules for non-glare surfaces and high dark/light contrast are the same factors that make signs universally accessible, including to people who do not have any severe vision impairments. Although people who are legally blind are certainly not driving, it is by no means unusual for people with some vision impairment, and particularly different forms of “color blindness,” to be driving and to need all the advantages of non-glare surfaces and high contrast for signs. The single exception is when traffic signs and parking signs are required to be reflective for night driving.

Type sizes need to be large, so they can be seen from a distance, and can be read and understood when viewed from a moving vehicle. Signs need to have as few destinations as possible on each sign. One of the design rules that helps is to cluster all the destinations under one arrow, rather than adding a separate arrow to each destination. If there are many destinations, it is helpful to put all destinations in one direction on a separate sign, and put two signs side by side.



Certainly it is appropriate during specific times of the year to have special temporary signs that direct prospective students to the registrar, as an example. If you have such signs, you need to be sure they give useful information. For instance, there is a sign at the top of College Drive that says “Register for Classes” with a straight ahead arrow. This is not at all helpful, because virtually the entire campus is straight ahead. If the sign said “Register for Classes in Student Services” that would enable the visitor to know which building to enter. In any case, having scattered



permanent signs merely means that the visitor on campus does not know where to direct his or her attention in order to find a destination. It's more effective to have a prominent coordinated system that combines campus maps with directories and effective directional signs. Signs for special events like graduation or class registration periods can be added when appropriate, but should include a destination or meaningful arrow so they actually provide some wayfinding assistance.



Once a visitor in a vehicle understands the correct direction toward an appropriate parking lot, the next task is to identify the parking lots. Currently, there are plenty of signs identifying each individual parking lot. However, the letters that distinguish them are very small, and many of the signs are placed too low to be seen from a distance. You should be able to identify each lot from a distance, and then signs with more detailed information that can be used by pedestrians can be located in each parking lot..

Lot A has very confusing marking. One sign at the entrance



states that it is for staff parking only. However, when you enter, you find another sign that states that students with permits can park there as well. It's never very clear as to where visitors can park and pay, and it's particularly important for this lot, since it is closest to the library, which might draw outside visitors.



There is nothing more confusing to visitors than contradictory signs, or signs that do not give accurate information.



There are “Parking Pay Stations” shown on the campus map, and it seems as if these might provide a place for visitors to pay for parking. However, that isn’t obvious from the signs provided, and during our visit, there were signs stating that permits were not available for purchase. Visitors need to be assured that they won’t be issued tickets if there are no clear instructions as to how they should pay for parking, or where they are allowed to park.

A good touch are the QR symbols provided on the pay to park signs. The introduction of this technology means that the campus may be open to providing these symbols for other wayfinding and informational purposes, and it will be quite possible to provide some of the information in audible format to blind and severely vision impaired students and visitors.

However, many of the symbols were placed too high for people of short stature and those in wheelchairs.



## Subsidiary Directional Signs

At various locations around the campus, in addition to the street name signs and the post and panel signs placed in a few locations, there are additional directional signs. We saw signs directing to restrooms, to the library, and to the elevator on the plaza level, for instance. These signs were very small, and probably were not compliant



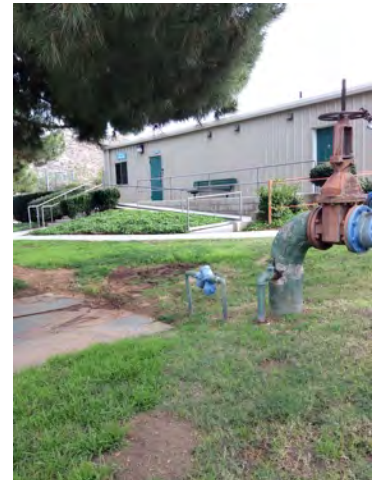
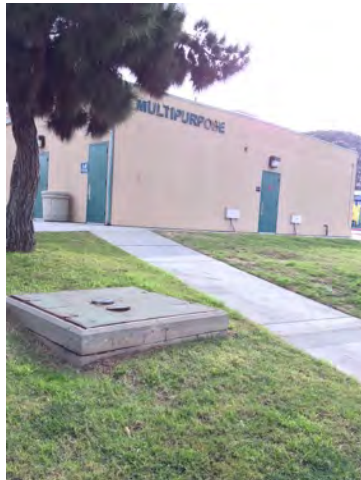
with even the most minimum requirements for visual sign sizes. They certainly were not large enough to serve the purpose of wayfinding if you were trying to find one of these facilities more than a few feet from the sign itself.

Obviously, then, the system of exterior directional signs for pedestrians, as well as for vehicular traffic, needs to be redesigned, so that the signs are much larger. They also need to be more consistent.

Currently, some locations have signs, and others have no signs at all, even though they are just as needed at those points.

### **Accessible path of travel to Parkside buildings**

If you are not driving to the Parkside area of the campus, you would normally approach it as a pedestrian or a person in a wheelchair from Krameria Street.



However, although there are ramps once you pass between the warehouse and the Multipurpose Room the pathway up to those ramps is not accessible, since it is too steep and has no handrails. If there is a legally acceptable pathway at this location, a



sign should make that clear. However, it seems that some changes will need to be made before nominal accessibility might be achieved.

## Problems with the Interior Signage System

### Directional and Informational Signs



The directories and directional signs within the various buildings need to be completely redesigned. The overhead signs in the classroom areas of the library, humanities and student services building are serving both as directories, listing every room, along with the room numbers, and as directional signs. They do a poor job of both, since there is too much information on each sign, they are poorly laid out, and too small for overhead signs. In addition, from some locations, they are blocking the overhead “Exit” signs

required by the fire department and essential during an emergency.

What is needed is a well designed floor directory for each floor, at eye level, with a non-glare surface and high dark/light contrast. In addition, there should be directional signs to such special facilities as restrooms and the elevator. Even the newest building has an extremely poor directory which also doubles as a directional sign. The







cover is so shiny that it serves better as a mirror to check one's reflection than as a guide to the services on each floor. The arrows are confusing, and some of the information is less than helpful. For instance, there is a direction to the IMC, but when you get to that door, the sign says it is for staff only. On top of that, if you go outside to try to find the student entrance, there is no entrance to such a facility, but only to other areas. These may well be part of the IMC, but it is poor practice to direct to something with a specific name, and

then not have the destination with the same name.

One particularly egregious example of poor informational signage is in the library building. On the third level, there is a door marked "Emergency Exit Only. Alarm Will Sound." On the bulletin board next to the sign are three signs, obviously designed and printed by frustrated staff members, all with essentially the same information directing persons with disabilities in the procedure necessary to use the exit. These signs use decorative type with multiple colors. They are obviously not effective, because there are three of them. In other words, the first one didn't work, so someone came up with a second version, and then a third one was added. Rather than understand that the signs weren't working, the staff just added to them!



## Room Identification Signs

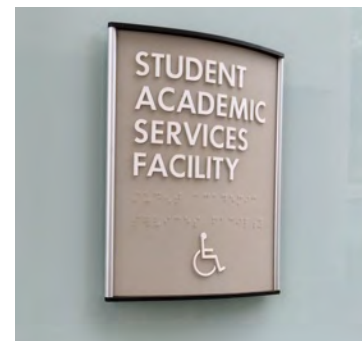


There are very few correct room identification signs on the entire campus. Except for the newest signs, most of the braille is incorrect, since the sign companies involved obviously did not use a braille translator. Some of the braille is Grade 1 braille, where each cell represents a single letter or symbol, which violates both federal and state

standards. Some are translated, but the dots and cells are either much too close, or spaced out way too far. Many signs have numbers that read as nonsense, since the number sign was not used. Other signs have both braille and raised characters that have been sandblasted, and are barely raised above the surface. The braille is composed of flat cylinders rather than of rounded dots. Almost all of the raised characters, even when they are technically correct in stroke width, have sharp edges, which makes them very difficult and uncomfortable to read.

There are also signs that are badly deteriorated. Signs were sandblasted using a material that tends to delaminate when exposed to the sun. Such signs should never be used for exterior locations.

Unfortunately, the newest facility on campus, the ultra-modern Student Academic Services Building, has signs with very poor contrast. The signs have white characters on a light tan background, and they are very small, with minimum sized characters. Consequently, anyone with even a minor vision impairment would have a problem





reading these signs unless they approach them very closely. In some cases, the characters also appear to have stroke widths that exceed the maximum of 15 percent of character height, and like most other signs on the campus, the characters are too close together in some instances. It looks as if the Exit Route signs were an afterthought, probably required when the building got its final inspection, and they, and the occupancy signs have even less contrast than the room signs, and the characters are even bolder.

## Exit Signs

On the whole, the campus lacks raised character exit signs. These signs are required by Chapter 10, the chapter that deals with egress, and are also required by the latest federal standards and by Chapter 11B of the California Building Code, Title 24. There are also locations where Exit Route signs are improperly placed. All exit signs are to be placed only adjacent to doors and doorways, never along corridors in an attempt to use them as directional signs.



## Restroom Signs



Restroom signs should be as simple and direct as possible. The best terminology, although the standards do not require specific terms, is “Men,” “Women,” and “Restroom” (for single user restrooms). If there are facilities designated for staff only, that can be added as informational text on the geometric door sign, or as an additional word, such as “Staff Men.” Adding the word “restroom” to the men’s and women’s gender specific facilities merely confuses everyone, and particularly those who are blind. In the pre-school center, “Boys” and “Girls” can be substituted. If there is an outer entrance to a vestibule that contains two gender-specific restrooms, the outer door can be labeled “Restrooms.” If a pictogram is used, separate the male and female figure with a vertical line to indicate that the restrooms inside are gender specific.



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The most important feature of the geometric door symbol signs required in California is that they contrast with the door. A few of the existing signs do meet this requirement, but many others have little or no contrast with the door. For instance, there are white signs on white doors and black signs on black doors. The shapes thus serve no purpose to people with impaired vision, or those with cognitive disabilities. It is also important that the unisex symbol signs have a triangle that contrasts with the circle. These signs are a good location for the ISA, if the restroom is accessible.



### Accessibility Signs



One of the major impressions that we got was about the very large number of wheelchair symbols. Virtually every door had one. This overuse of the ISA tends to actually draw attention away from the locations where the symbols are vital to access. For instance, the symbol should be used at exterior entrances to buildings when they are accessible. The symbols for the automatic doors in the Student Academic Services Building are so small they serve little purpose. It would be important to have a sign with the ISA directing to the very few elevators available for some of the older buildings. When it is used sparingly and correctly, and large enough to see from a reasonable distance, the symbol can be very helpful in directing people around the accessible pathways of the campus.



## Assistive Listening Systems

One noticeable omission on campus was signs indicating the availability of assistive listening systems. We did not see one such sign on the entire campus. The state of California actually requires the availability of these systems in many more locations than the federal government does, and there should be signs notifying those who are hard of hearing that the systems are available, and where they can be obtained. Of course the ideal situation, particularly in a new building, is to have a hearing loop system installed around the perimeter of classrooms or any type of assembly room, but portable systems are preferable to not having any systems at all.

## Numbering System

In looking over the numbering of the interior rooms, some of which can be entered



from the building exteriors, or have both interior and exterior entrances, there does not appear to have been much consistent attention paid to numbering. The system of starting each number with a multi letter building identification makes for a difficult to access system, particularly for those who are functionally blind.

We note that sometimes rooms within rooms are correctly designated with the basic room

number, followed by A, B, C, etc, other rooms appear to have no room numbers at all, and others have independent numbers. During an emergency first responders might have a difficult time finding someone under these circumstances. Although it can create a temporary problem to renumber and rekey rooms, it might make sense

if the sign system needs to be redesigned and fabricated, to consider a complete new identification system.

For instance, on the campus map, two digit numbers are used to identify the various campus buildings. This system does not coordinate in any way with the room numbers for these buildings. If you look at the way that many community colleges identify buildings, it is by letter. This gives the opportunity for 26 independently labeled buildings. By using letters for the parking lots, which are much fewer in number, MVC has removed the most useful wayfinding tool.

We would recommend going to a completely new system: Identify each building with a letter, followed by a 3 digit number. That way, you can use numbers beginning with “1” for Floor One, “2” for Floor Two, and “3” for Floor Three. You have 99 available numbers for each floor -- plenty even if some rooms get divided in later remodeling schemes. The buildings can be identified the same way on the map as they are on the within the building, and it would even be possible to mount a large letter right on the building for wayfinding purposes. The parking lots can be numbered.

This is a campus that needs a great deal of work and attention to provide real and practical accessibility for the whole gamut of students, staff and visitors of the future. Redoing the sign system from the ground up can provide a beginning to that work, and can hopefully inspire a successful outcome.

## Appendix I

### Examples from the Existing Campus Signage System

#### Existing campus map and event calendar signs

These signs need to be replaced with a comprehensive system that borrows the best aspect of the existing campus map sign, i.e. that it is on a pedestal and tilted so that it allows someone in a wheelchair or of short stature or with impaired vision to get up close to the map.

#### Existing exterior directional and informational signs

There is a hodge-podge of styles, sizes and types of information. Some of the signs are outdated. Some are contradictory, and others give useless information. There are no signs at all with the crucial information as to how one accesses the upper plaza area of the campus from the main entry point other than by stairways.

#### Accessibility signs

The only references to accessibility are a proliferation of wheelchair symbols (ISA) on door identification signs. For instance, even the electrical and maintenance closets have the ISA on their incorrect braille and raised character signs. At the same time, basic accessibility is ignored. As an example, the tactile sign identifying the center for students with disabilities is installed so high above the floor, as well as on an outward opening door, that it is both dangerous and unreadable.



## Identification signs

Very few of the sign vendors providing door identification signs understood even the most rudimentary rules for the signs. There is every possible error made in the provision of braille on many of these signs. At the same time, the raised characters, which are provided for the many people who are blind who do not read braille, also ignore most of the standards, and virtually all of the best practices that we know make these signs possible to read with any efficiency.

Even the restroom door signs, simple geometric symbols that have been required in California for years prior to the establishment of the ADA are often incorrect. There are black signs on black doors, white signs on white doors, symbols with contrasting borders rather than complete contrast with the doors, and signs with tactile information that actually belong on the wall signs.

Installation of tactile signs is at every conceivable height. In the dental building, signs identifying the treatment rooms are usually high above the floor, and some are installed with obstacles directly in front of them. The purpose of the tactile signs appears to have been completely missed by some of the companies in charge of installation. Most of the signs should never have been accepted for payment, although it is difficult to blame college staff for not understanding all the many detailed sign rules.

## Appendix II

### General Guidelines and Rules for Accessible Signs

#### Directional and Informational Signs

There are three classifications of directional signs that are needed to form a complete campus wide system. These are large signs meant to be viewed from moving vehicles, exterior signs to direct pedestrians around campus, and interior directional signs for the various buildings. These signs are often accompanied by informational signs that provide additional information about using the facilities.

#### Identification Signs

There are two types of identification signs. The first type is the large sign that is attached to a building, or is included on a monument sign in front of a facility or outdoor area so that people can identify their major destination from a distance and head in the right direction as they walk around the campus. It could also be a stand-alone post and panel sign that identifies an exterior area such as a parking lot.

The second type of identification sign identifies a final destination -- almost always a discreet room or space. This type of sign can also identify a floor level, a restroom or a designated exit door. These are the only signs that the ADA or California Building Code require to have raised text and braille so they can be read by functionally blind individuals. All the other signs mentioned above, including the directional and informational signs, are meant for visual readers only.

#### Signs indicating accessible features and elements

A third type of sign required for a complete system are signs that direct people from inaccessible to accessible features, elements, and paths of travel. They also identify

accessible features when the feature is hidden or obscured, or its appearance does not reveal its accessible features.

For instance, when we approach a restroom door, all the features of the restroom are hidden behind the door. If we don't identify it as an accessible restroom, there is no way of knowing, in an older building, whether it is accessible or not. On the other hand, when we approach the lavatory in the restroom, and it has a knee space below it, accessible faucets and soap dispenser, and the pipes are wrapped, we don't need a sign to tell us that the lavatory is wheelchair accessible.

Scattering wheelchair pictograms on every door (we will call these the "ISA" or "international Symbol of Accessibility" throughout this report), does not make up for barriers that are not addressed in a meaningful way. Such sign clutter merely confuses everyone about the intent of the Americans with Disabilities Act, which is to enable and encourage independent access to public buildings by persons with many different kinds of disabilities, not just wheelchair users.

### **Some Universal Sign Rules**

In order to inform the college about the standards that are basic to the correct design of a code compliant and accessible wayfinding plan, we want to introduce something we have long called the "universal sign rules."

The rules break signs down into four basic categories:

**One:** Signs that identify permanent rooms and spaces of the facility and site

**Two:** Signs that direct to, or inform about destinations and services of the facility and site

**Three:** Signs that direct to or inform about accessible features, elements and paths of travel of the facility and site

**Four:** Signs that are not impacted by laws or codes and do not have to be accessible (such as logos and the names of individuals or companies)

Several of the rules impact the first three categories.

**Non-glare Finishes:** All Category One, Two and Three signs must have non-glare finishes. The original ADA Accessibility Guidelines had a definition of non-glare that required that the glare as shown on a standard gloss meter could not be higher than 19. This put the sign finish at the same non-glare level as what is called “eggshell” paint. Certain brands of non-glare acrylic that we have tested, such as non-glare Mitsubishi Shinkolite or Acrylite test at 19 as well.

**Why:** Many types of vision impairment react strongly to glare. Anyone who is middle-aged and has started to develop incipient cataracts starts to notice the way the glare of street lights affect them at night. White streaks may seem to appear across shiny signs, so it is more difficult to read them.

**High dark to light contrast:** All Category One, Two and Three signs, as well as some other features such as stair striping and detectable warning surfaces must have a high contrast between two adjoining surfaces. The letters and symbols on signs must contrast with their backgrounds.

The misunderstanding of most people is that this is about “color contrast.” Actually, colors have nothing to do with the standards and codes, although of course different colors or hues are easier or more difficult to see. However, we are talking about people who have impaired color vision. They may not be able to tell one color from another if the shade of lightness or darkness is too similar.

Therefore, it is the black and white, or gray value of the colors, or “Light Reflectance Values” that are important. There is a formula that allows us to determine if the contrast between two surfaces is a minimum of 70 percent, which is the suggested



minimum. It works, but does have a problem if we try to compare two darker colors. A good rule of thumb is to use a light color that has a light reflectance value of no less than 45. Then, we choose a dark color and apply the formula. If the result is 70 percent or greater contrast, we have probably met the minimum requirements.

Almost all paint colors and other commercial pre-colored materials have easily obtainable LRV numbers, or “light reflectance values.” One easy way to determine an approximate number is to get a large paint swatch book, and check your material next to a matching paint swatch. The index of the paint colors will give you the “LRV” for that color.

Here is the formula to apply:

Subtract the darker color LRV (the smaller number) from the lighter color LRV (the higher number). Then, divide the answer by the LRV of the lighter color. The decimal number you will get will be the same as the contrast percentage.

Example 1: Lighter color is 58. Darker color is 12. Result when you subtract is 46. Divide 46 by 58. The answer is 79 (.793). Therefore, this combination has a contrast of 79 percent, so it exceeds the minimum requirement.

Example 2: Lighter color is 58. Darker color is 20. Result when you subtract is 38. Divide 38 by 58. Result is 65.5 (.655). Therefore, this combination has a contrast of 66 percent, so it does not meet the minimum requirement.

You can ask the designer or architect for your sign system to show the LRV combinations for the signs to make sure you have adequate contrast. Obviously, the higher contrast the better, especially for signs that need to be seen from a distance. Remember that the great majority of people with vision impairments, even when they are legally blind, are able to use their vision to some extent. If you provide very good contrast, adequate signed text using non-decorative fonts, you are greatly

increasing the number of people with disabilities who can use the signs on campus for independent access to the environment.

Another aspect to consider is the very high percentage of the male population with “color blindness.” About 8 percent of the male population has the most common form of color blindness, which we generally call “red/green color blindness.” That means they can seldom distinguish greens from browns, or any other color with a lot of green or red in its mix, such as blue-green or turquoise and magenta or purple. Many of them also cannot distinguish bright or deep red from black or charcoal gray. Red on black signs in elevators and for safety signs may be virtually invisible to some of these people.

There are, when added to this basic population of 8 percent color blind subjects who do not have other vision impairments, probably from 12 to 15 percent of the population that cannot distinguish various colors one from another. Aging vision is another source of defective color vision, since colors often acquire a yellowish tinge for older people.

Maps of all kinds are especially difficult for people who have some form of color blindness. Two cartographers who have studied the affect of color blindness on map reading have designed a free piece of software called Color Oracle that anyone can install on their computer ([www.colororacle.org](http://www.colororacle.org)). If you click on this software while viewing anything colored on your computer, it will show you how it looks to people with three different forms of color blindness. Although it’s not meant for people with other forms of vision impairments, it is an aid in determining if something has enough dark/light contrast as well. One of the cartographers informed me by email that he often checks his own design work by copying it in black and white on a copier. If the shades of gray are too close together he assumes the colors he has used

do not have adequate contrast. As he informed me, when something like an evacuation map is not readable, the mistake could be fatal.

### **Readable Typefaces, Sized Appropriately:**

The universal signs rules for typefaces are simple: No decorative typefaces, no italics, and no oblique letter styles. Reading of text is easier when “non-decorative” typefaces are used. Therefore, such typefaces should be used very seldom on signs, probably confined to logos and headings of promotional materials in order to enhance certain themes. They should never be used for code compliant signs. Italics and oblique typefaces are also not allowed, because they make both tactile and visual reading more difficult.

To see the proper sizes of type for each type of sign, please read the rules under the different sign types. The universal rule is to always take into account the distance from which the reader needs to first become aware that the sign exists, and then how close it is practical to get before being able to actually the read the text visually. Think about obstacles such as trees, shrubbery, sections of buildings and architectural details, and where people might be congregated. The universal rule is to always take the entire environment into consideration when deciding on the size type for a specific sign. Never make an arbitrary decision that all signs will be a certain size, no matter what, and then squeeze in the type to fit the sign. Do messaging first, then location, then decide on appropriate sizing of the characters themselves.

Type sizes can also aid messaging when larger type is used for the most important part of the message, and subsidiary messages use a slightly smaller type size. For instance, a person’s title is not as important as the person’s name. On the other

hand, the name of a department is usually more important than the names of the people in that department.

### **Messages That are Clear, Brief, and Consistent**

All those involved should decide together on what terminology will be used to name or describe destinations throughout the system. Is it the “Janitor’s Closet” or “Custodial?” Is it the “Theatre” or the “Theater?” Does the health department offer “X-Rays” or “Imaging?”

Numbering systems should be well designed by someone who will take the time to think through how people will move logically through different areas of the building. Do not just follow the numbers on the construction blueprints. They have a purpose totally different from public wayfinding. If you need to retain them, then put small inexpensive vinyl numbers higher on the door frames where maintenance and security personnel can see them easily, and design a more accessible system for the public. Both functionally blind and sighted people, including first responders to a hostage situation or a heart attack, will benefit from a well-thought out and highly visible consecutive numbering system.

Identify hallways and corridors by the numbers of offices or other areas that are to be found within. When there are identified rooms within larger rooms, such as offices within the general reading room of a library, use the number of the reading room followed by A, B, etc. That way, anyone coming along the corridor and looking for 101A understands they will find it by going into room 101.

Instead of “Lobby” or “Vestibule,” provide the name of the area the person will be entering. A sighted person can tell right away that they are entering a lobby or vestibule, and a blind person will not get any useful information from such a sign.



Always strive to use signs to provide useful information, as briefly and clearly as possible.

There are other rules that are effective for one or the other type of signs. We will cover those under the separate headings later in the report.

### **Specific Rules for Tactile Identification Signs (Type One Signs)**

**Uppercase, sans serif typefaces:** Tests have shown that people who read characters solely by touch benefit greatly from the shapes of all uppercase, sans serif typefaces. Sans serif typefaces have strokes that end abruptly, rather than with bars or “hooks” at their ends. There are many sans serif typefaces that are attractive and appropriate for various forms of architecture. It is not only not necessary to use Helvetica for all signs, but it is actually not the most readable tactile font available, because of the confusion that it causes between certain letters, such as “R” and “A.” Characters are to be raised a minimum of 1/32 inch above the surface of the sign face. (Raising them more than that is not helpful to tactile readers, so keep the height at about 1/32 inch.)

### **Small characters with slender strokes and open shapes**

Tactile characters should be fairly small, so they can be read quickly by touch much the same way braille is read. The size is to be 5/8 inch minimum and 2 inches maximum. Two inch high characters should be used only on such signs as elevator hoist ways and identification signs that need to be read from a substantial distance. The larger the character, the more difficult it may be to read. Characters about 1 inch high are usually quite easy to read, and can be read visually by many people within a close distance.

Stroke widths of raised characters are measured at the top of the stroke for touch readers, and at the base of the stroke for visual readers, if the characters are both

tactile and visual. The top of the stroke can not be wider than 15 percent of the character height. Measure across the uppercase character “I.” The visual base cannot be wider than 20 percent of the character height. Thus, you can use a font with a 20 percent stroke width, and bevel the edges of the tactile character so it comes to a 15 percent width or less at the top surface. Beveled or rounded characters are much easier to read than character with straight sides and sharp edges. There is no minimum width for the top surface, to accommodate rounded characters, which can be produced by thermoforming or molding, and are the easiest of all characters for many people to read by touch.

Character widths are a percentage of character height as well. To determine the width, you measure the width of the uppercase “O” of whatever font you are using. The maximum width is 110 percent, and the minimum is 60 percent. It is much better to choose a font with the wider widths, particularly if the character is somewhat bold. Condensed characters are very difficult to read, especially by touch.

### **Spacing Between Characters**

Raised characters must have a space of at least 1/8 inch between the top surfaces of adjacent characters, measured at the closest distance. The touch reader must be able to discern each character individually as the fingers pass over the character shapes. For instance, an “A” and an “M” that touch at the base create a “V” between the two characters, which is very confusing to the touch reader. This is another reason why serif typestyles are not allowed for raised character signs. There is a special rule when you bevel the characters. If the top of the characters is only 15 percent width and the spacing between characters is 1/8 inch, the space at the base of the characters can be only 1/16th inch. This gives a definite advantage for the provision of beveled characters. The lines of type also have rules as to how close and far apart

they can be. The minimum distance is 135 percent of the height of the uppercase character “I.” The maximum is 175 percent.

### **A “hybrid” type of sign for people who are visually impaired**

It became obviously very early after the passage of the ADA that the two generally different types of blindness were not well served by the sign guidelines for tactile door or room identification signs. Those two general types are those who test as “legally blind” but who use their vision to get around and even to read, and those who have no usable vision, or perhaps are just able to distinguish a little light and shadow, and therefore can only read by touch. These are the people we describe as “functionally blind.”

As we have pointed out, touch readers require small, slender stroked characters, all uppercase, and all sans serif. Visual readers benefit from larger, bolder characters, upper and lower case, and can read serif typefaces. They are obviously also not as limited in the exact placement of the signs.

Consequently, the rules that were finally approved by the Department of Justice in 2010, and that became legally enforceable on March 15, 2012 throughout the United States (the 2010 ADA Standards for Accessible Design or “ADA SAD”) now allow information to be duplicated so that there is one set of text with raised characters and braille, and a corresponding set that is visual only, and follows the visual rules. The sets of text can be on two different signs or can be on one sign. That means that visual readers can benefit from larger, bolder characters with upper and lower case, while tactile readers can have smaller, beveled raise text that is all uppercase in a sans serif font. Only the visual sign has to have contrast and have a non-glare finish, so the tactile sign can be “invisible” to the sighted reader. This type of sign also opens up many exciting design opportunities, as well as being more accessible.

## **Installation Rules**

Raised character signs need to be placed in a specific location throughout every building and site, and all facilities need to place them pretty much in the same location, regardless of the architecture of the building. Therefore, since people who are blind know how to identify doors and doorways, and usually want to know “what is behind the door,” the decision was made to link tactile identification signs to doors and doorways. The only exception is the labels for the buttons on elevator control panels.

So that signs would not be hidden when doors are propped open, and sign readers would not be hit in the face by an opening door, the rule is, to mount the sign in an 18 inch clear space adjacent to the latch side of the door.

## **Specific Rules for Visual Type Two Signs and Text on Type Three Signs**

Although touch readers appear to need uppercase characters in order to read text easily and quickly, people who read visually seem to benefit more from upper and lowercase mixtures when they are reading. This is especially true for longer text, or text of more than one word. Serif typefaces are often very readable by sight as well, and are allowed by the ADA and by California building code (Title 24, Chapters 11A and 11B). Be careful not to confuse decorative typefaces with either serif or sans serif typefaces. There are decorative forms that do have serifs, or are without serifs, but are still put into the “decorative” category. It is thought that serif typefaces are less tiring to the vision when a lot of text is being read, especially as the serifs tend to lead the eyes from one character to the next in a smooth manner.

## **Larger bolder characters for visual readers**

Although the minimum character size for visual characters is also 5/8 inch, only a few informational signs or informational text on tactile signs ought to be that small.



Most directional signs should be somewhat larger. Use the new visual size chart as a guide for minimum sizes, but provide minimum sizes only when you are dealing with a lot of text that can be viewed very close. Use the exceptions in the code only when necessary. It is also usually best to use the bolder stroke widths. Remember that most visually disabled readers do have usable vision.

### **Visual Size Chart**

The rules for stroke widths are slightly different for visual characters than for raised characters. The stroke width can be 20 percent of the character height maximum, and the minimum can be 10 percent. The character widths are the same -- a maximum of 110 percent of character height, and a minimum of 60 percent. Combine wide character widths with bolder strokes whenever possible.

### **Inter-character and interline spacing**

The spacing between characters is allowed to be a little tighter for visual characters than for tactile ones. The average is just 10 percent of character height. Remember that for tactile characters that are also visual, the spacing can go down to 1/16th inch if the spacing at the top of the character is maintained at 1/8 inch. The spacing between lines is the same as for raised characters.

When text is provided for signs that use the Symbols of Accessibility (Type Three signs), follow the text rules for Type Two visual signs whenever possible. Symbols of Accessibility are not accompanied by raised type or braille. In most cases, those who use wheelchairs or text telephones must have usable vision in order to do so independently. Therefore, there is no point in accompanying them with raised text and braille.

## **Braille**

When raised characters are used to identify a door or a floor level, they must be accompanied by braille. The only other place where braille is required is to accompany the raised symbols on elevator control panels, and for the star that designates the egress floor on elevator control panels, hoist way signs, and within enclosed stairwells to identify the door leading into the building proper on the egress floor.

The new standards, legally enforceable since March 2012, include some new rules for braille. As in the past, braille must be contracted braille (formerly called Grade 2 Braille). This is a type of braille shorthand, and requires a translation program. That rule has always been in affect throughout the entire United States. However, in the past, California was the only state with rules concerning dot spacing, cell spacing, or dot height. There were no federal standards or standards in other states. That is what was meant by “California braille.” Now, there are specifications everywhere in the United States, and California specifications are included as one of the two choices. There are also new specifications for the required space between two lines of braille, and for the circumference of the braille dot base. California manufacturers who were using the correct California braille font can continue to do so.

There is also a new rule about capitalization of braille. The new standards prohibit capitalizing every braille word or letter. Capitalization is only used for braille when it adds meaning. For instance, the word “women” does not change its meaning whether it is all lower case, upper and lowercase, or all upper case. In braille, it would be all lowercase according to the new standards. However, the acronym “ADA” would be capitalized throughout, to show that it is pronounced as three distinct letters standing for the “Americans with Disabilities Act,” whereas the room

name “Ada Smith Library” would only have the first letter capitalized, to show it is a proper name.

## **Pictograms and Symbols of Accessibility**

There has been a lot of confusion between these two sections of the ADA standards. Pictograms are a special type of pictographic symbol that conveys meaning through a simplified picture of an object, an animal or plant, or a human figure. A simplified symbol of some coins and bills would be a pictographic symbol for money, a bank, ATM or money exchange whereas a dollar sign is a typographic symbol, since it does not look anything like a piece of money. By coincidence, all four of the “Symbols of Accessibility” are pictograms. However, the U.S. Access Board chose to treat them differently from other pictograms.

Both pictograms and Symbols of Accessibility must follow the universal sign rules for non-glare surfaces and high dark/light contrast. The implication is that they must be sized appropriately to their viewing distance. However, there is a clear distinction between pictograms that are located at eye level to identify doors and doorways, and those that are used as part of informational or directional signs.

The reason is, that if a facility like a restroom is identified only by a gender pictogram, for instance, a person who is functionally blind has no way to know that it is a restroom, or what gender is served by that restroom. People who are functionally blind do not, on the whole, understand visual symbols, and have not learned to read them by touch. Even if they are raised, there is no standard set of such pictograms that could be recognized by everyone.

That is why there is a rule that pictograms that identify doors must be located within a six inch high space or “field” and the corresponding raised message must be placed below the field, and accompanied by braille. For instance, a pictogram of

two gender figures may designate a staff restroom, but the proper text would be either “restroom” or “staff restroom,” but not just “staff,” because the “meaning” of the pictogram is that a restroom is behind the door that can be used by either sex. “Staff” could describe a break room, a workroom, or a special entry as well as a restroom reserved for staff.

Other pictograms, such as the “no smoking” pictogram, do not identify a door, but inform us about how the building may be used, so any text is visual only. In addition, the Access Board has made clear in numerous technical assistance reports and in explanatory text in the standards that the ISA (wheelchair pictogram) does not require text, either visual or tactile. It’s useful to remember that people who have no usable vision are not apt to be navigating alone in a wheelchair or with a scooter, because of the risk of hitting others or running into walls or posts. Those who have enough vision to operate a wheelchair also usually have enough vision to see a pictogram if it has enough contrast and is sized appropriately.

One Symbol of Accessibility that does require text is the Symbol for Hearing Loss, which designates the availability of an assistive listening system. Information needs to be provided as to how the patron obtains or requests the listening system. TTY symbols sometimes have arrows, or other text explaining where they are located. The ISA can benefit from directional arrows when the path of travel reaches a decision point, or an elevator or restroom is not immediately visible. It is also helpful to designate the type of accessible facility available. If you need an elevator, you don’t want to be directed to a restroom, or vice versa. Again, however, visual text and arrows are all that are required.

## Summary

This completes our rather lengthy introduction to the details of accessible signs. There are many other details that are part of the codes and standards, and best practices as well, that make the signs truly usable and readable by readers of all kinds. However, you should be able to get a sense of the kind of knowledge that your sign designer needs, and your signage vendor requires, in order to provide you with a truly code compliant as well as a universally accessible wayfinding and room identification system throughout your campus. Following these rules does not usually require much more expense on the part of the signage manufacturer, other than the training they must provide for their designers, fabricators and installers. After their staff is trained, it should become second nature for them to produce signs that will not only reduce the risk of a lawsuit, but will actually help everyone find their way around the campus.



## Appendix III

[see attached file]