

Protecting *the* Messenger

Selecting successful rigid substrates for architectural sign projects.

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PHOTOS BY TOM CRANE



This comprehensive system of exterior wayfinding, identification, informational and map signs is for a neighborhood in the heart of Baltimore. The sign is made of clear-anodized and silk-screened aluminum. Anodizing the aluminum gives it protection from graffiti.

AH, THE SUBSTRATE, the base on which sign makers build their signs. What goes under your sign design is as important as the design itself. If your substrate doesn't hold up to the elements or it looks wrong in the context it has been placed, you're back to square one with your client.

Such a plethora of substrates are available for the picking, however, that it can be downright overwhelming. If you're creating an architectural sign system for an airport, hospital, convention hall, hotel or some other location, how do you even begin the process of choosing substrates, let alone arrive at the best alternative?

We spoke with a *value engineer*, a production manager, some designers and other industry experts to find out how they decide on the substrates for their environmental sign programs.

Their methods and approaches vary, but typically, they choose substrates by determining the wants and capabilities of their clients, by examining what substrates will hold up in what weather conditions and by whether those substrates fulfill regulations such as ADA.

QUESTIONS, QUESTIONS, QUESTIONS

L. Richard Poulin of Poulin + Morris, New York, starts the process at the meeting table where the design team, the client and often an architect brainstorm and ask questions to narrow down the substrate choices. A primary question is, what will be the purpose of the signs?

When creating an architectural system you need to solve two problems, explains Jerome Cloud, principal of Cloud and Gehshan Associates Inc. in Philadelphia: Wayfinding and what Cloud calls *place making*. A wayfinding system is signage that directs people where they need to go. Place making, however, is about creating image and

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This exterior sign system for George Mason University solves wayfinding problems previously experienced by visitors, faculty, staff and students. The signs are made of fabricated aluminum with cut bronze letters and cast plaque. The posts are made of fluted aluminum extrusion (of the type usually used for light posts).



An environmental identity sign for a renovated streetscape in Philadelphia is a panel constructed of a screen-printed sheet embedded in fiberglass. Thirteen different display panels were designed around the themes of commerce, transportation and architecture.



Display panels made of porcelain enamel in the Drexel University campus sign system present the institution's academic strengths, successful programs and historical highlights. The panels are located in high traffic areas and also have a map on the opposite side of the sign. Porcelain is very durable, but it has cost issues.

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identity for the facility through design, vocabulary and, yes, substrates.

An example of wayfinding signage is maps. Cloud and Gehshan Associates designs campus mapping systems. A metal stanchion is constructed that holds changeable map panels made of porcelain or a screen-printed sheet embedded in fiberglass. Porcelain, explains Cloud, is hard to scratch or damage — unless you take a sledgehammer to it, of course. It's more expensive and more permanent than the embedded screen print.

Whether to choose the more expensive and long-lasting porcelain or the screen print is not just a cost issue. "It depends on the longevity you hope to get out of the product," says Cloud. "Cost is one issue, but some of our clients, their facilities or campuses are in flux, they may have to change the thing in a year."

A still less-expensive, less-permanent alternative would be to sandwich a digitally-printed sheet between acrylic.

Donor-recognition systems lend a location identity and mood. Designed to thank a contributor — often someone who is closely affiliated with the place — the donor signs tend to be made from high-end substrates and are usually placed in lobbies or libraries of schools, institutions and hospitals.

"They're for people who have given generously, so they need to be thanked

appropriately," says Cloud. "So, you'll find things etched in glass, etched in metal, and better lit, more like a display."

Design firms also work with the client to figure out what the building environment is like: what materials were used in constructing the facility and what colors are prevalent? Sometimes, the architectural context or *material palette* suggests the possible substrates, Poulin says.

For instance, Cloud and Gehshan Associates achieves a carved look for a medallion with resins and metal powders (rather than wood or urethane) because the metal look is compatible with the client's interior finishes, as well as the other substrates — such as other metals and glass — that Cloud prefers using.

An additional benefit to the cast resin, made by mixing resin and bronze powder and pouring into molds, is it's an effective

method for making multiples.

Sometimes, the substrate *is* the building — Cloud and Gehshan sent an artisan to a hospital in Philadelphia to sandblast the hospital's name into the interior stone wall for a subtle look.

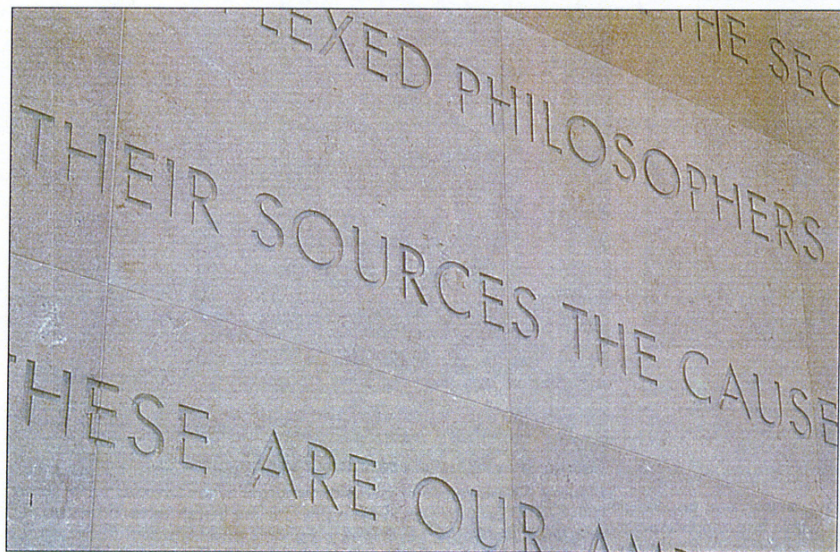
Another consideration is maintenance. Poulin wants the person in charge of upkeep at the facilities present at the initial brainstorming session so he can find out what substrates the client is capable of cleaning and repairing.

"We'd hate to design a program we know that, as soon as we're finished and it's up, it's going to start to deteriorate because they can't maintain it properly," says Poulin.

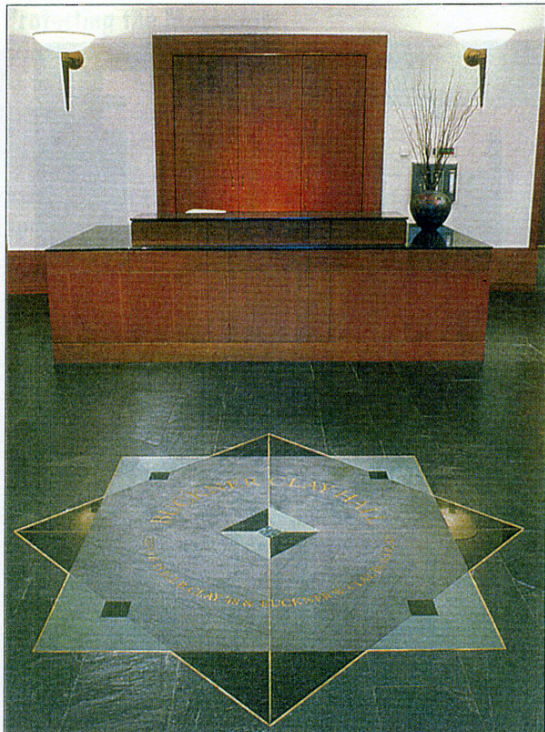
Of course, the cost question will pop up. However, the cost of materials is never determined in a vacuum. How long the sign system needs to last (two years or 20 years?), how durable the system needs to be and how many signs are required at how many sites affect the total cost and the return on investment for the client.

To illustrate his point, Poulin explains that one or two acrylic signs would be significantly less expensive than a couple of stainless steel signs.

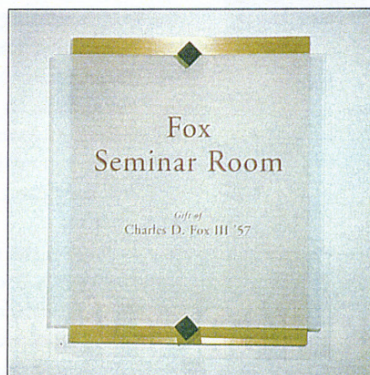
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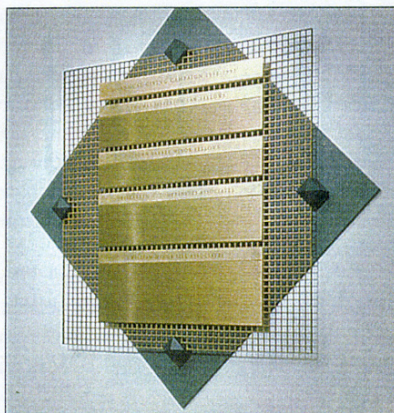
The building as substrate: a quotation sandblasted into the limestone wall of the lobby becomes the mission statement of the Abramson Pediatric Research Center.



This donor-recognition system for the University of Virginia School of Law is used for both annual and permanent fundraising campaigns. Floor medallions in granite, slate and bronze honor major gifts.



Other givers to the law school are recognized with signs made of bronze and etched glass. "Caplin Pavilion" is carved in glass. The other sign has etched and filled bronze resting on a welded, bronze grill with a Corian® background underneath.



These directionals are also part of the law school's donor system. "Fox Seminar Room" is screen printed onto acrylic. "Revercomb Courtroom" is on photopolymer, and the bronze background has the room number applied. The numbers are waterjet-cut bronze.

"But, if the client came to us and said, 'we want our name on a beautiful material, and we have 175 locations,' those numbers would become closer together now," says Poulin. "Quantity helps us get a better competitive price."

Another question Poulin asks is, will the client be adding to the sign program down the road and, if so, where will the client be able to buy materials? For instance, if the client doesn't have the budget or is not large enough to consider national suppliers, then local or regional materials should be used.

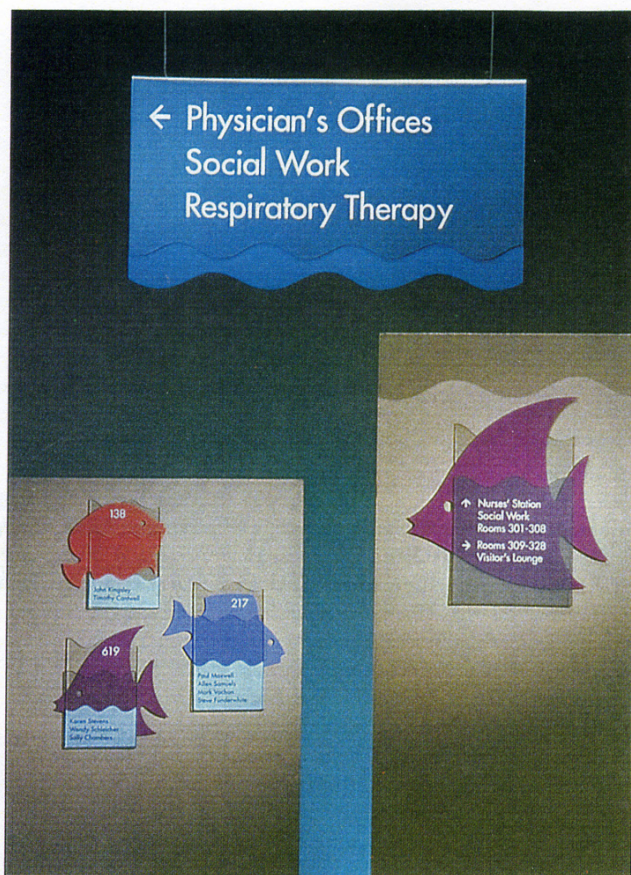
THE ELEMENTS

Signage substrate choices are also dictated by the weather and the surrounding environment. Wind, sunlight and acid rain are the weather elements that do the most damage to substrates, while chlorinated water, vandals and even insects are examples of environmental factors.

Signs need to be constructed to hold up in strong winds. In some regions of the country in fact, wind load requirements must be fulfilled. Doug Glienke,

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These interior signs for the Children's Seashore House, a children's rehabilitation facility, are made of photopolymer fish and have an acrylic insert holder. The fish have Braille and the room number in relief on them. Client-generated sign inserts increase flexibility and decrease cost and replacement time.



production manager of Nordquist Sign Co., Minneapolis, suggests aluminum or polycarbonate with a formed face.

Meanwhile, materials that will be exposed to sunlight need to be UV-rated by Underwriter Laboratories (UL) or a similar organization. Acrylics and polycarbonates can yellow, then craze and eventually crack and fall apart over a period of years if they're not manufactured to withstand ultraviolet light. "If it's not UV rated, the aesthetics can go really quickly," says Joe Scarpino, engineer with Federal Sign in Las Vegas. Coatings for wood and foam should be UV rated, as well.

Metal holds up under sunlight, but rain and humidity rust steel. In southern Nevada, where Scarpino often works, Federal Sign uses steel because it's less expensive and the humidity is nearly nonexistent. "Where humidity is high and corrosion's a problem — the rest of the country, more or less — that's where you use a lot of aluminum," says Scarpino.

Scarpino does use aluminum in dry Nevada when conditions call for it, however. He worked on a sign system for a hotel that had several fountains around

it. The wind blows the chlorinated fountain water around, and chlorine corrodes steel. So, his crew went with galvanized steel (coated with zinc to prevent rusting) and aluminum casing for this hotel's illuminated signage.

While wood also deteriorates in sunlight and can be damaged by humidity — and thus must be sealed — wood signs have multi-legged threats, too.

"You have to worry about insects and termites," says Scarpino. "If you don't use the right wood in certain areas, especially Florida... well, I've seen signs actually crumble."

But wood looks nice, and certain cities and towns specify wood, continues Scarpino. "They want that look."

High-density urethanes are an alternative to wood, though. Insects don't stomach the synthetic, and it can be coated for UV protection.

In general, any substrate can be prone to vandals, but if vandalism is a consideration, aluminum or polycarbonates are possible choices.

Polycarbonates are a better choice than acrylic for plastic outdoor signs if the client's facilities are in a rough neigh-

borhood, for instance. Polycarbonates are more expensive, but much stronger.

"If you're worried about rocks, you will go polycarbonate because rocks will bounce right off it," says Scarpino. "Whereas with acrylic, the rock will go right through it."

Metals such as aluminum can be coated with an epoxy or polyurethane paint, or they can be powder coated (a baking process). These coatings protect against scratching and graffiti, although not much of anything holds up to the aforementioned sledge hammer.

Even interior signage can fall victim to vandalizing, but a more common problem is, if the signs are within reach, the oils on the hands of passersby.

The oil darkens some metals, such as brass or bronze, so they need to be clear coated. Even if the signs aren't in reach they should be coated because even air can darken brass and bronze. If signs are directional and will be at the pedestrian's level, they probably will need to comply with ADA codes.

FINDING YOUR WAY WITH ADA

ADA stands for Americans With Disabilities Act, a law prohibiting discrimination on the basis of disability. Strict codes for pedestrian-level directional signage exist.

Thus, the ADA guidelines, in addition to client preferences, determine what substrates you use. To be ADA compliant, signs have to be accessible to the blind and visually impaired.

Two popular choices for ADA-compliant signage are either sandblasted glass or acrylic, or a plastic or metal coated with photopolymer.

Photopolymer is a thin sheet of plastic with a photo-etched back that is most often laminated onto an acrylic or aluminum background.

"It's one way the Braille is achieved," says Cloud. "To get the raised letters or to get the raised Braille, there are only certain materials you can work with."

Acrylic coated with the photopolymer is the most commonly used, according to sources, because painted aluminum and painted acrylic achieve the same look, but acrylic is cheaper and lighter. However, Glienke at Nordquist Sign Co.

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Inc. occasionally has clients who specifically request aluminum for their indoor directionals.

Paul Tylman, executive vice president of Alphabet Shop in Elgin, Ill., describes another process his shop uses for ADA-compliant signage.

One method, available from 3M, involves cutting a thicker vinyl and applying it in reverse to a clear face material. Then the face material is heated and it molds around the vinyl forming raised letters. Then the vinyl is put onto plastic.

Moving upwards from the pedestrian level, directional signage no longer has a Braille or tactile lettering/symbol requirement because it's out of reach. Thus, you're less limited in your choices.

Our sources still prefer plastics for the ceiling and wall signs, again because plastic is cheaper and lighter. Lighter is particularly desirable in a ceiling sign, just in case it falls.

But, letters on these higher directionals still need to be a certain cap height, the contrast between the background and letters needs to be a certain percentage and the paint finishes should minimize reflectivity.

Poulin of Poulin + Morris notes that, while the majority of ADA signage his firm has made is for indoor use, almost every project he has worked on included making signage for areas that are not completely closed to the elements.

Parking garages are open to the elements, and have ADA, or accessible, parking spaces. So, signs with tactile lettering or Braille are needed, he explains. Also, signs guiding people to restrooms, pay phones and security offices in a park, zoo or recreational facility will be unprotected from weather.

Photopolymer won't hold up in garages or the outdoors. "The polymer is a water-based material. If you put that

outside it's going to wash off the wall," says Tylman. He suggests a magnesium or zinc chemical-etched sign.

ADA signage, whether interior or exterior, can lend character to a location, as well. Cloud and Gehshan designed photopolymer fish for a children's rehabilitation facility. The fish meet the ADA regulations, yet are fun and colorful.

Photopolymer fish are a good example of the role substrates play in architectural systems. While the fish design is playful and appeals to children, part of the task of conveying information and image through signage falls on the substrate, too.



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