



SAVING NEON

A BEST PRACTICES GUIDE



Above: Crest Theater, Sacramento, CA. The marquee, channeled script lettering, and vertical sign were originally constructed in 1949, restoration in 2009 by Young Electric Sign Company (YESCO).

Cover: One of the Starlite Motel's neon divers in Mesa, AZ, constructed in 1960, restoration was completed in 2013 by Larry and Lee Graham of Graham's Neon in Mesa, AZ.

Above photo: Al Barna 2017, Crest Theater, Sacramento, CA
Cover photo: Al Barna 2011, Starlite Motel, Mesa, AZ



NEON BEST PRACTICES CHECKLIST

This checklist is a summary of the best practices in this guidebook. As you embark on a project to save a neon sign in your neighborhood, use this list as a starting point to set expectations for best practices with your sign contractor. Include the details of this checklist in your contract or bid request. It is a great way to let sign experts know that materials and details matter to you, and that you expect best practices with an excellent outcome.

- Pigeon abatement/cleaning:** Pigeon droppings are very damaging to a neon sign. Do an inspection and if pigeon guano is evident, the budget and schedule should be increased to include power washing, damage repair, and bird control products/deterrents. If there is no pigeon damage, vacuum the inside of the sign, hand wash the sign inside and out with a mild detergent, rinse, and dry thoroughly.
- Porcelain enamel signs:** Clean stains and all rust spots. Replace rusted screws carefully so the glass does not crack. Treat all chips and exposed metal with an anti-rust product. Buff, wax, and polish the porcelain sign faces. Never drill new holes—the porcelain may crack. Most porcelain signs retain vivid colors and should never need to be painted unless severely damaged. The painted spine or return of the sign should be painted to match the original color.
- Wire/transformers:** Replace old secondary wiring with gas tube oil (GTO) wire by an experienced and qualified contractor. Replace non-working transformers with new electromagnetic transformers rated for outdoors at same voltage. Never place transformers on the outside or leave unused transformers inside the metal cabinet. Replace transformer shelving if deteriorated. Install a service timer for energy conservation and another service switch on the sign for safety. Never use pull-chain transformers.
- Connections/rubber boots:** Most vintage neon signs are engineered using ceramic or glass housings that allow the electrical connections to be made inside the sign cabinet. It is essential to maintain the electrical connections in this original configuration. Do not use rubber boots (also called end caps) for a repair or to re-engineer a neon tube with double-backed electrodes. Wire connections should not be external to the sign. External wires degrade the historical integrity of the sign and clutter the visual field of the original sign image.
- Glass housings/holes:** Replace old or missing glass housings for all original housing holes in the sign. Use original holes even if the sign is redesigned. Never drill new holes or use bushings (non-traditional housings that are smaller in diameter). Never run wire from the housing hole to a rubber boot or end cap.
- Tube supports:** Replace all original tube supports (also called spacers or standoffs) that are missing or broken. Tube supports are mounted on the sign and wired to the glass tubes in order to hold the tubes in place, away from the face of the sign. Use glass tube supports and stainless steel screws that are rust resistant.
- Structural supports:** Inspect and repair anchor points, steel cables, turn buckles, and angle iron supports that attach the sign to the building. Engineering drawings will be required if you are permitted to take a sign down to restore it. New, stronger structural supports will be required for the reinstallation.
- Metal cabinet:** Repair structural damage, remove and repair rust damage. If pigeons have been nesting in the cabinet, pigeon debris cleaning will be a necessary part of restoration and will add time and cost to the project. Weep holes should be cleared and access panels repaired and sealed after restoration to keep out water, dirt, and pigeons. Never “skin” the sign by adding new metal on top of the original sign.
- Paint:** Sand the old paint to reveal any layers of older lettering, and photograph it for historical documentation. Scrape or use chemical paint stripper to remove old paint to uncover the bare metal of the sign and prep for painting. Paint is the best way to protect a metal sign. Use a metal primer and at least two coats of paint. No vinyl lettering! Match original colors as closely as possible using actual paint samples. Insist on sign-specific or automotive grade paint. One-Shot and/or Matthews are sign-specific paints perfect for hand lettering. Always use paint that is graded for outdoors.
- Paper pattern:** Create a paper pattern that traces the actual size of the design/letter forms and the original housing holes in the sign. A detailed pattern is essential to ensure that glass tubes: 1) accurately recreate the original design of the sign; and 2) are bent at a 90-degree angle to fit inside the original housing holes.
- Glass tubes:** Replace broken glass tubes. Keep original tubes if they are in good condition and color can be matched. Bend glass tubes to match paper pattern to accurately recreate the original design. Tube ends should be bent at a 90-degree angle to fit perfectly in the original housing holes. Never run wire from the housing hole to an electrode or through a rubber boot or end cap.
- Insurance/avoidable damage:** Every care should be given to the fragile nature of a neon sign. The sign shop should be insured and accept responsibility for avoidable damage to the sign during any stage of the restoration.
- Warranty:** Include a one-year warranty on all labor and materials for a repaired or restored neon sign. For repairs, specify exactly which side and the particular letters/decorative parts of the sign were repaired under warranty. Hail storms are tough on neon tubes, and warranties generally exclude hail or weather damage.
- Maintenance and repair:** Establish a plan with funds and a budget for regular maintenance and repair.
- Documentation and conservation:** Create a survey to document the surviving neon signs in your area. Include photographs of the signs before, after, and during restoration. Save porcelain housings or donate them to a neon museum for future restorations.
- Support:** Contact neonspeaks@gmail.com for support, questions, input, more resources. Go to neonspeaks.org to request a free PDF updated version of this guidebook.

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A BEST PRACTICES GUIDE

AUTHORS

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A Neon Speaks Guidebook



Neon Speaks is an annual festival and symposium that celebrates and promotes information-sharing about the artistic legacy and restoration best practices for classic neon signs.

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The Hotel Carlton in San Francisco looms five-stories tall over the historic Sutter Street corridor. This local landmark is kept in glowing condition by Jim Rizzo, neonwks.com



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Photo: Al Barna 2017; Neon Works, Oakland, CA

FOREWORD

NEED A CRASH COURSE ON SAVING A NEON SIGN?

Has a neon sign in your neighborhood fallen into darkness? With this best practices guidebook, you can be the spark to save that beloved beacon's luminescence.

Conservation is not a term you usually associate with a rusted neon sign. But when a neon neighborhood icon is threatened by neglect, refacing, or removal—it's time to kick into conservation mode to "save the sign" in any way possible, and in this order:

1. Restore the sign.
2. Keep the sign in place as is.
3. Move the sign inside the business.
4. Designate the sign as public art; restore or preserve it and keep it nearby on public display.
5. Donate the sign to the closest history or neon museum that can keep it on public display.

Materials matter. Neon signs were built to last with metal and glass; many signs have been around for 70 years and are still glowing brightly with proper maintenance. Neon signs are more energy efficient than incandescent bulbs, and can last decades longer than signs made of plastic panels, aluminum, and/or light-emitting diodes (LEDs).

Our journey began by documenting San Francisco's most famous neon signs and grew into a five-year adventure as we created a photographic record of our city's vintage neon collection. We were driven to understand the best way to save these works of art, and searched for some written guidelines. So many neon sign experts told us: You should produce a guidebook for neon restoration best practices and be sure to send us a copy!

After many questions, answers, and windshield surveys, it was time to invite all the neon sign experts we could muster for the Neon Speaks Festival and Symposium in April, 2018. Working with our talented contributors, we consolidated the symposium participants' vast expertise and experiences, gathered community consensus from the review team, and created this guide.

Check for updated versions of this guide book, available as a free PDF at neonspeaks.org.

The more you know about the essential details of neon sign repair and restoration, the more successful you will be in bringing a neon sign back to its former brilliance. You don't need to be a neon expert, you just need to be passionate, be informed, gather champions, and use your particular skills to do whatever you can.

Owners: If you can invest in your neon sign by keeping it painted and illuminated, it will pay you back with increased patronage. Old customers will celebrate the sign and new customers will be attracted by the neon's welcoming glow.

Neighbors: There are so many ways to start a positive buzz: a party, a social media campaign, and media attention. Let the building owners know you love neon signs and are willing to vote with your patronage and/or crowd-funding participation. Form a relationship with local government and historical societies to win their support for a vintage sign protection ordinance.

State and city planners: Neon signs are a brilliant example of neighborhood and small business history. These hand-made works of art should not be destined for the dumpster. The win-win combination of embedded history and artistic ingenuity in these signs creates a bridge between past and present that deserves protection.

Preservationists and Historians: Creating a record of historic assets is in your wheelhouse. Surveys, photographic exhibitions, and tagging signs in historic image databases all serve to preserve important details in the design, construction, and historic integrity. Seek historic status and/or an ordinance to protect vintage signs in your area.

Each restored neon sign becomes an artful icon of small business, history, and neighborhood pride,

—Al and Randall Ann, 2018

Al Barna & Randall Ann Homan are the founders of the *Neon Speaks Festival and Symposium*. As neon historians they advocate for the preservation of the artistic legacy of historic neon signs via consultations, talks, tours, events, and exhibitions. Al and Randall Ann are the authors and photographers of *San Francisco Neon: Survivors and Lost Icons* (Giant Orange Press 2014). sfneon.org

INTRODUCTION

BY DYDIA DELYSER AND PAUL GREENSTEIN

Put simply, “restoration” means making something old like new again. It means returning something, *anything*— a painting, a house, a car, or a neon sign—to its original condition, functionality, and appearance.

Many people use the term “restoration” loosely to stand for an array of approaches and outcomes. Philosophically, a restoration is a debt that we of the present owe to the future, an obligation of accurately representing, and passing on, the works of the past. This is restoration’s core premise and promise. Seen this way we, as custodians of past artifacts, bear the responsibility of “best practices”—of doing restoration work correctly. This obligation to accuracy, and to caring for the past for the sake of the future, forms the crux of what any “restoration” entails. Anything less, while perhaps valid on its own different terms, cannot be called a restoration.

Both restoration and preservation endeavor to retain historical aesthetics. Restoration returns a neon sign (or another historical object) to its original state, while preservation attempts to hold it in its current state—not only retaining evidence of age and wear but allowing that to show.

Restoration also returns historical functionality—a restored car must run, a restored neon sign must be lit (with neon). Preservation may or may not include returning an object to its original functionality. Adaptive reuse, on the other hand, differs in all respects from the other two: it forever alters a historical artifact in favor of the present, promising to lend contemporary relevance and appeal to an object grounded in past aesthetics and functionality. These are fundamental distinctions that reveal divergent approaches to the past, present, and future. Because many old signs have represented



Photos on this page: Dydia Delyser 2017, Los Angeles, CA

Hotel Californian restoration project in Los Angeles, CA, 2017. This restored neon roof sign sits atop The Paseo at Californian, a low-income housing development on the site of the demolished 1925 Hotel Californian. L-R: Sean Gordon, Jason Michaud, Chris Waters (with Harpo), and Paul Greenstein.



Photo: Al Barna 2015, Oriental House of Beauty, San Francisco, CA

Paint is the best way to protect an outdoor neon sign. The patina of peeling paint is fascinating and can be preserved if the sign is removed and stored indoors. When left outdoors, a clear coating cannot permanently stabilize the patina or prevent the paint from gradually peeling off.

multiple businesses over decades (with paint and neon changed each time), old signs can provide tantalizing glimpses into a community's past if the sign's integrity is maintained.

We make no bones about it: for surviving neon signs displayed outdoors, carefully carried out restoration is the best-practice approach.

The distinctions between restoration and preservation are important because restoration must turn back the clock. For a neon sign, that means removing all layers of paint to the bare metal, repainting, and replacing broken parts, and repairing the structure itself. Once a restoration is undertaken, physical evidence of past colors (whether original or subsequent) is lost forever (though, of course, it should be photographically documented). Preservation, on the other hand, promises to allow those layers, and those histories, to remain visible.

Today, with increased appreciation of "patina" (the look of age and wear), preserving layers of rust and peeling paint is an alluring approach. Alluring yes, yet technically a tenuous proposition because working signs typically live their lives outdoors and in the elements—in a dynamic environment where the tensions between steel, glass, paint, and electricity cannot remain stable for long.

To understand the importance of sign restoration, we must understand these dynamic tensions. Neon signs are based on steel "cabinets" which, even when treated (galvanized, etc.), will rust and rot over time, particularly with the common accelerant of pigeon detritus on their insides.

For signs, the paint itself fulfills a primary role as sealant, protecting the sign's steel matrix from the elements. Once the paint is breached because of cracking, peeling, holes, or wear, a process of decay initiates and inevitably accelerates. The elements—water from precipitation and condensation, acids from air and rain, plus particulates from pigeons and road grime—launch an all-out attack on the paint and the metal from both inside and out.

However, in cases where patina itself indicates a sign's significance, old signs can be preserved indoors under environmentally controlled conditions, so that the ongoing processes of decay can be slowed—though "rust never sleeps," its wakeful march can be arrested.

A sign removed from its original location becomes divorced from its community connections.

Neon signs were designed as attention-grabbing grace notes in our landscape. When signs are restored and kept in place, they can unite historical



Photo: Randall Ann Homan 2018, David's Delicatessen, San Francisco, CA

Moving a vintage sign from the facade to the interior of a business can be a win-win solution, especially if the exterior sign is vulnerable to vandalism or harsh weather. The David's Delicatessen sign was too often vandalized on the outside; now it casts its glow from within.

and contemporary constituencies and inspire local community support and funding.

A neon sign retains the highest community and historical values when kept in its original location. Signs in the landscape reveal a geographical uniqueness and specificity; they help shape the very identities of their communities, something they can only achieve outdoors, in place.

The first priority in saving a sign is to allow it to remain on the original building. If a sign cannot be retained outside its building, moving it inside represents an option that allows a sign to retain community connections. Sometimes new business owners value a neon sign enough to make a place for it indoors.

Certainly, a neon sign saved, but separated from its original location, is a better-than-nothing scenario. If long-term sign preservation outdoors—for signs in a state of peeling patina—is an impossible task, then it becomes clear why sign restoration, for an outdoor sign, is the best-practice option.

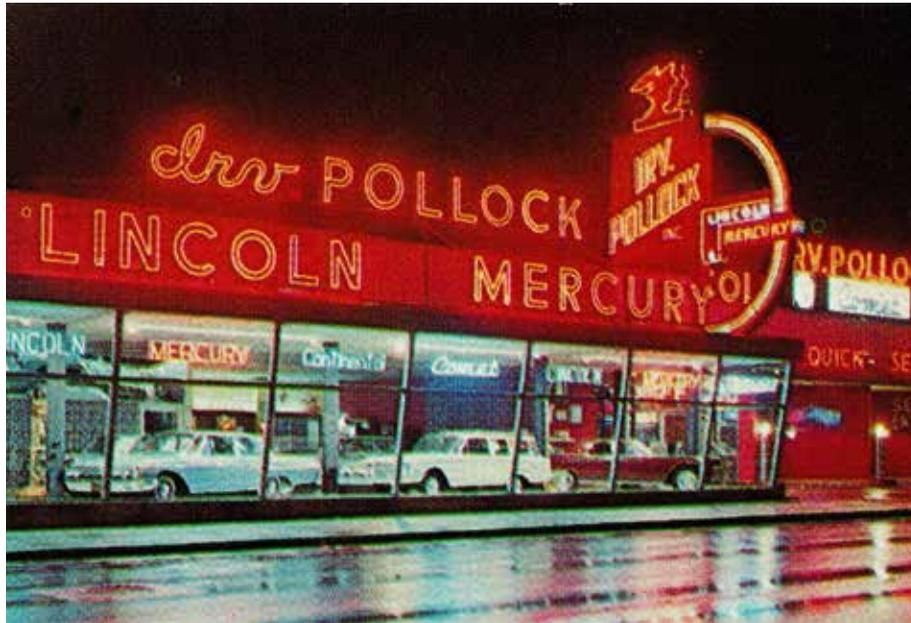
Though restored neon signs face the same assault from the elements that preserved signs do, modern tools and techniques can be used to return neon signs to their original states, and to effectively halt, or

dramatically decrease, renewed decay, even outdoors.

Important here is learning from an allied field: vehicle restoration. Cars and motorcycles emerged in roughly the same time span as neon signs. They quickly became symbols of modernity, rose in general popularity in the early-to-mid-twentieth century, and endured major changes as we entered the twenty-first century. Cars and motorcycles were built from the same core materials as neon signs—steel, copper, rubber, and glass. This means that the tools needed for restoring each are essentially the same.

Significantly, because cars and motorcycles developed avid restoration communities and high market values long before neon signs did, the products and techniques developed for historic-vehicle restoration can be productively applied to neon signs: the tools, techniques, and products used for paint stripping, color matching, and metal repair, for example, work equally well on a neon sign as they do on a rumble-seat roadster.

In fact, the analogy and the lessons carry even farther: though most antique-car owners today know the approximate values of their automobiles, vintage signs remain under-appreciated. That rusty, painted-over, unlit sign derided as blight may prove the equivalent



Vintage business card of Irv. Pollock Dealership in Toledo, OH
Image courtesy of Wyatt Landesman, Quantity Postcards

Automobiles and neon signs have a lot in common. Wildly popular and emblems of modernity in the 1930s, they became an essential part of the American scene by the 1950s. Neon signs and vintage cars are both made with metal and glass, and similar restoration techniques are used by collectors.

of the now-vaunted barn-find Bugatti. For a neon sign, carefully removing non-original alterations and adaptations can reveal Art Deco detailing and period lettering styles. Carefully crafted neon glass tubes can spark not only the spirit, but the very radiance of the past into the present.

Still, like the restoration of a car, the restoration work of a sign should never be undertaken without a viable plan for completion and the knowledge that community partners are committed—all the way from repermitting to relighting.

Not all budgets can sustain a restoration. If finances are not immediately available, a neon sign may be better left in place until full funding can be assured. But, critically, a budget that can sustain restoration should undertake the restoration using the best practices in this guidebook—even when that means that financial goals must be set higher.

Because restoration necessarily removes original historical traces, those restoring a neon sign typically have only one chance: get it right the first time, or destroy the historical authenticity of a sign forever.

For example, not all cities will tolerate taking down a sign for it to be restored. But this simply means

that your city may need convincing. That may take time. But others have done it. And city planners and preservationists are often eager to be on board with sign-restoration projects once they come to understand the historical and community value of a neon sign.

Cutting corners may present a cost-saving temptation, but inaccurate and poorly carried-out restoration degrades a sign's historical and cultural value. Following the advice offered in this guidebook will help even novice sign aficionados become skilled sign saviors.

Adapting neon to LEDs, for example, turns an artful treasure that can last more than 50 years, made from sustainable and recyclable materials by skilled hands, into a thing that is unrecyclable and made chiefly from unsustainable petroleum products, a thing that may not last even a decade.

A simple decision to trim expenditures at the start, by “adapting” neon to LEDs, destroys not only the look and the cultural and historical value of a neon sign, but it destroys all that sign represented in the first place.

Sometimes, however, minor adaptations can be reasonably made: in signs, changing the name of a



Photo: Ed Christiansen, 1950s Postcard of Market Street, San Francisco, CA

The majority of signs produced in the United States from the 1920s to 1960s are gone forever. Neon signs from this era are not only cultural place markers, they are rare survivors. San Francisco’s Market Street in the 1950s was awash in neon light from signs for all kinds of businesses: from theaters to dentists, insurance offices to coffee shops. Every sign pictured in this postcard is gone, except for the Odd Fellows sign, the last survivor.



business can often be accomplished simply by bending new glass and using the original holes—“Dydia’s Café” can become “Paul’s Café” instead, or “Cleaners” updated to “Laundry.”

But when signs feature artwork in their designs, minor adaptations are more difficult and may be impossible: a sign in the shape of a shoe will not lend itself to becoming a salad bowl (unless of course the name coincidentally turns out to be “Shoes’ Salad Bowl!”). Here, best practices may be more complicated, and business owners can be encouraged to retain a neon sign with its hand-painted artwork and message in addition to, or perhaps instead of, marking their own name. An upscale business in West Hollywood, CA, serves as a fine example: they opened in a building with a neon sign, and they simply kept the name “Laurel Hardware” for their restaurant. Whatever work will be done, best practices explore the realities of capability and cost before any work is initiated.

An often-overlooked best practice is to carefully photographically document all work at every stage of the restoration process—before, during, and after. These photographs can be retained by the business owner, by sign preservationists, by local historical societies, and/or on an online archive.

Offering a business owner a framed photograph of their restored sign helps sustain a community bond. Documenting the work done on a neon sign today, preserves a record of the work’s extent and accuracy, and ensures that the work you initiate today can be celebrated in years to come.

Meanwhile, accuracy in restoring a sign to its original lettering and colors (not the faded colors exposed to fifty years of UV light) allows past tastes and styles to sparkle into our present. Because color trends and lettering styles are constantly changing, restored neon signs, like all objects of design—think of clothing,



Photo: Al Barna 2012, Carlos Club, San Carlos, CA

Documenting all of the surviving neon signs in your area and posting them on-line is a great idea and may come in handy. When a business is sold, sometimes the neon tubes suddenly disappear, or the sign is refaced. This was the case with the Carlos Club in San Carlos, CA. Timely photos could have proved that the neon tubes were in place when the business was sold. Because the Carlos Club has historic status, the sign should be returned to the condition it was in when the business was sold. So far, the neon tubes remain missing, as shown in the daytime photo below.

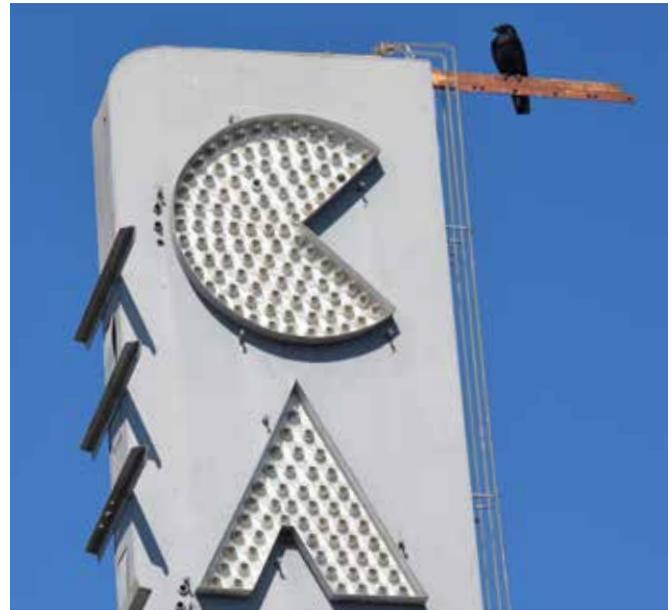


Photo: Al Barna 2018, Carlos Club, San Carlos, CA

logos, or automobiles—may reveal how trends in taste shift with time. The original design can show equally well how excellence in design stands the test of time. Neon signs can act as powerful beacons of the past in our present landscapes, enabling that light to illuminate our future. This they do best when well restored using best practices.

While restoration is important as a practice (it must be done “well”), and a product (it must be finished “right”), it must also be understood philosophically and even ethically—as an obligation of the present to both the past and the future.

Understood as an obligation, best-practice-based restoration can help answer key questions: Should I “change” or “update” our sign, leave it “as is,” or restore it to its original state? Is it worthwhile to raise the funding to restore it? What historical-and-cultural value does my sign have “as is,” and can I improve that

by making it “as was” and restoring it for the future? Is my sign safe as it is, or should I invest in its future by preserving its past?

All of this may suggest that restoring a neon sign is a tall task—it is. But it is one successfully met by individuals and groups, by business people and community organizations, by city governments and skilled restoration specialists, alone and together, all across the country, every day. As we recognize the importance neon signs have in shaping community identity, restoring neon signs becomes a significant tool in preserving that identity—before it rusts away.

Dydia DeLyser and Paul Greenstein are at work on a book about the history of neon in the US. Dydia is a historical geographer at Cal State Fullerton and board member of the Museum of Neon Art and the American Sign Museum. Paul has been designing, fabricating, installing, and restoring neon signs in Los Angeles for more than forty years. dydia@fullerton.edu



BEST PRACTICES

The following are answers to frequently asked questions about best practices for neon sign restoration and repair. Sign restoration has its own special language and much of the lingo is explained in this section. These answers are not meant for sign shops experienced in restoration; they already know what to do. If you are committed to helping save a neon sign, this background knowledge will help you understand restoration details and decisions, both big and small.

The Castro Theater in San Francisco, CA, was restored in 2007 for *Milk*, the Harvey Milk biopic. The vertical blade and marquee were restored by Jim Rizzo and the Neon Works team of Oakland, CA. The tube-bending was done by Libby Cahill and Shawna Peterson.



Photo: Will Durham, Nevada Neon Project, City Center Motel, Reno, NV

Detail photo: Al Barna 2018, Kingman, AZ

PORCELAIN SIGNS

Q: How is a porcelain sign different from a painted sign in terms of restoration? Can you change the design of a porcelain sign?

A: Porcelain enamel signs are produced by baking a colorful glass coating onto the sheet metal of a sign face. Each color is baked on as a separate layer, then the porcelain face is screwed onto the metal cabinet. The colors on a porcelain sign stay vivid and beautiful, unless the sign is extremely deteriorated.

You can't change the design with new paint like you can with a sheet metal sign. The smooth porcelain surface is not friendly to paint because it doesn't provide the adhesion to prevent any type of paint from quickly cracking, shrinking, and peeling.

Cleaning a porcelain sign is the most involved part of its restoration. Clean stains and rust spots; buff, wax, and polish to restore the luster. Never drill new holes in the sign under any circumstances. Drilling could crack the porcelain and degrade the integrity of the sign. Use all new glass tube supports and stainless-steel screws that are rust resistant.

Porcelain signs are highly valued by collectors, they do not need repainting and the colors stay bright even when exposed to decades of sun, rain, and snow.



A porcelain neon sign on Route 66 in Kingman, AZ



Photo: Al Barna 2014, Radio-TV, San Francisco, CA

Detail photo: Randall Ann Homan 2018, Bel Air Motel (collection of CNI Signs), Fresno, CA

PATINA & PAINT

Q: The paint on our sign is peeling and it looks interesting. Do we have to repaint the sign? Should we take the sign down to paint it? How often does a sign need to be repainted?

A: After decades of neglect, a vintage sign might have a fascinating patina of peeling paint. In the next ten years, all of the paint could be gone with nothing left but a rusting metal cabinet. Paint is the best way to protect the sign. Whenever possible, save the vintage sheet metal instead of using aluminum as a replacement.

Patina is not forever, and rust is certain if an unpainted sign is kept outdoors. You can try to slow the patina peeling with a clear coating, but it will peel and shrink at a different rate, compounding problems. Sign-specific paint or automotive-grade paint is the best protection. Usually vintage signs are repainted in place with a roller for the background and a brush

for lettering. Removing a sign for restoration is problematic because it is easy to damage the sign as you take it down. Sign removal can be done successfully, but it takes extra time and requires working with local planning agencies and securing permits.

Sand the old paint first to reveal any layers of older lettering, and photograph it for historical documentation. Then scrape or use a chemical stripper to remove old paint down to the bare metal of the sign and prep for painting. Insist on either sign-specific or automotive grade paint. One-Shot and/or Matthews are sign-specific paints that are perfect for hand lettering. It is important to use paint that is graded for outdoors and metal.



Exterior neon signs require repainting, approximately every six to ten years.

Galvanized metal signs require a special self-etching primer. Failure to use the self-etching primer will result in new paint peeling and flaking in a matter of months because paint does not adhere to a galvanized surface. Always use primer and two coats of paint on the background and the foreground/lettering.

Painting letters by hand with a brush is best practice, no vinyl lettering! Vinyl might be cheaper but is not traditional and will shrink and peel faster than paint.



Top and detail photos: Al Barna 2015, Striper Cafe, Rio Vista, CA

PAINT COLOR

Q: What is the best paint to use for a metal neon sign?
What is the best way to pick paint colors?

A: Matching the original color is important to any restoration in keeping the traditional look and feel of a neon sign. Most of the time, your sign colors will match standard colors from sign-specific paint manufacturers.

Start with a condition survey of the sign, and collect a few paint chips. The paint samples should be collected from areas least exposed to sun and weather, like the inside the metal cabinet. Even if the inside was not intentionally painted, it often holds drips of unfaded, original paint. Match the paint chips to the manufacturer's

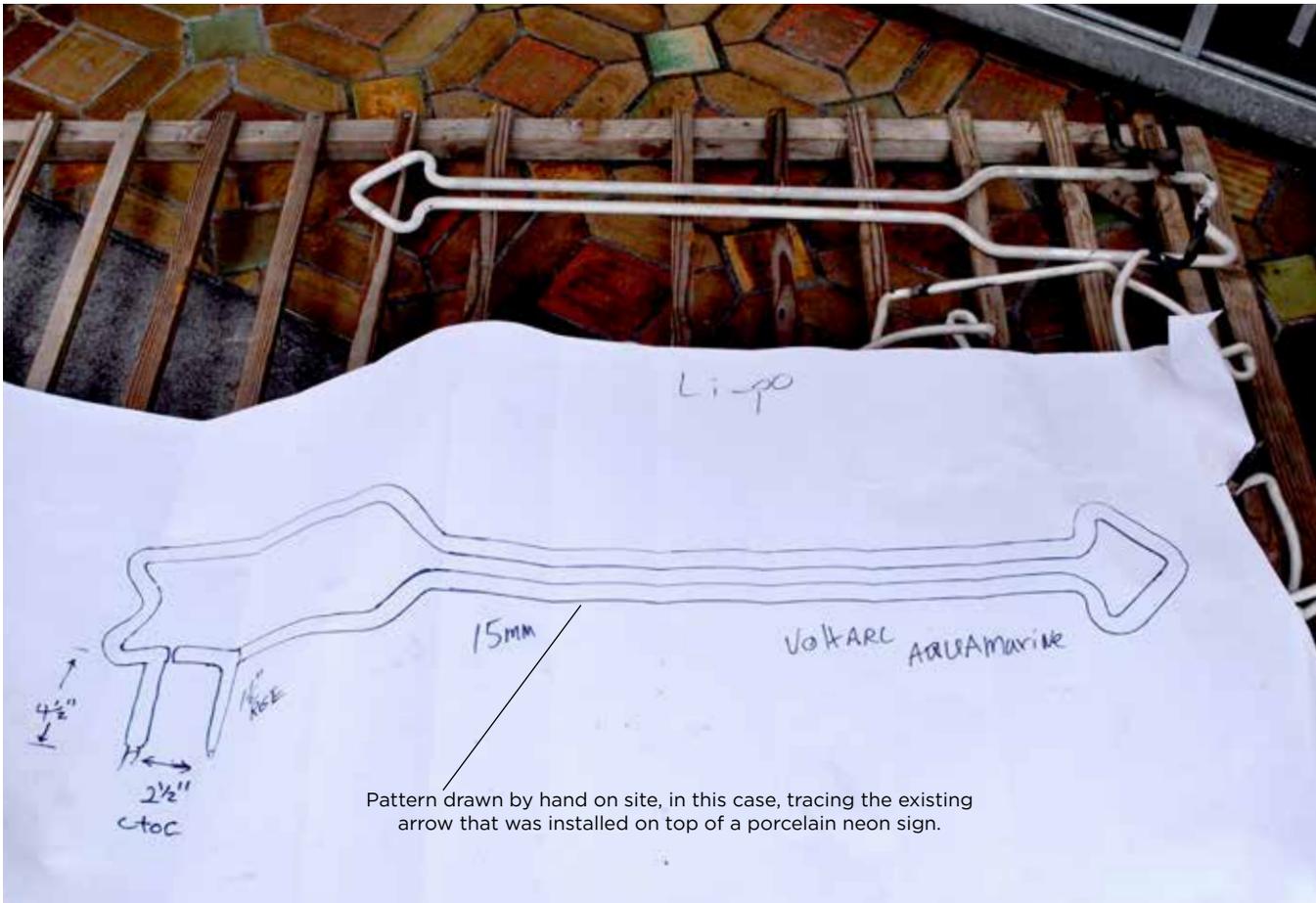
paint samples. Insist on either sign-specific or automotive grade paint. One-Shot and/or Matthews are sign-specific paints that are perfect for hand lettering. Be sure to match the paint chips to a physical set of paint samples. You can order the paint samples from the paint company if your sign shop doesn't have a set of sample colors. Never try to match colors online.

For hard-to-match colors, seek out the advice of a graphic designer or colorist, and use the Pantone Matching System (PMS) to get the best color match for paint.



The Striper Cafe shows an authentic paint color matched to the original sign with faded colors.





Pattern drawn by hand on site, in this case, tracing the existing arrow that was installed on top of a porcelain neon sign.

Photo: Randall Ann Homan 2018, Li Po Lounge, San Francisco, CA (restoration project by Arrow Sign Company)

PAPER PATTERNS

Q: What is a pattern and why is it important? Who makes the pattern? Is there software for that?

A: Creating a paper pattern is a quintessential part of restoring or repairing a neon sign. It contains lettering, design, and technical details of the sign.

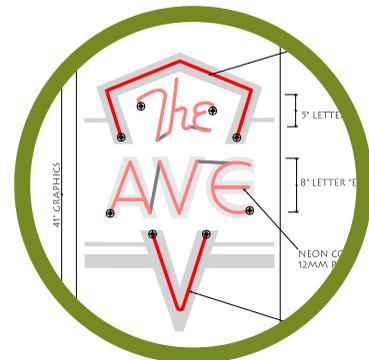
Tube benders rely on a highly detailed paper pattern, so the accuracy of the pattern is crucial to a neon repair or restoration. Creating an accurate pattern is essential and worth the time it takes to do it right. If the pattern is off even a quarter of an inch, the glass might not fit.

One of the first steps in the restoration process is to carefully

remove the existing glass tubing. Each tube should be laid on white paper and traced to create the pattern. It's especially important to indicate where the housing holes are located by marking them with a circled x.

This hand drawn pattern is used by the tube-bender to create new glass tubes. Be sure that you or the sign shop keep this pattern as a guide for future repairs.

Insist that all tubing is bent to match the pattern of the original design. Your sign contractor should create a paper pattern that



Software works for new signs, but restoration projects should be made by hand, tracing and measuring.

accurately traces the exact size of the design/letter forms and the original housing holes in the sign. The existing housing measurements and relative positions are crucial; these are called center-to-center measurements.



Photo courtesy of PetersonNeon.com. Shawna Peterson demonstrating tube-bending.

TUBE BENDING

Q: How are the glass tubes made? Is it hard to do? How do you make the glass fit on the sign so it matches the painted letters?

A: Glass tube bending is a highly specialized skill that is regarded as an art form. It can take twenty-plus years to perfect this skill. A tube bender heats up a glass tube on a gas-fired ribbon burner. One end of the tube is corked off and the other end holds a latex rubber blow hose. The bender puffs air to keep the tube diameter inflated or it might collapse while heating and bending.

The process involves heating and bending one small section of the tube. Once the section of tube is hot enough, a bend is made in mid-air while moving the tube to the pattern, then adjusting the bend before the tube cools—all in about five seconds. This can be a tricky task with very little room for error. One letter may have five to ten separate curves, and each curve is crafted one at a time.

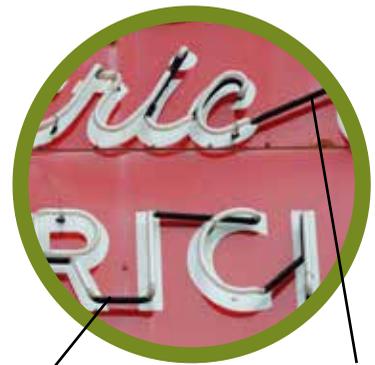
It is very important that the ends of the glass tubes are bent at a 90-degree angle to precisely fit inside the original housing holes. Don't use double-backs/rubber boots as a short cut to re-engineer the original design of the tubes..

Glass tube ends can be heated and spliced together to complete a design. Once the tube design is perfect, impurities are removed by a process called bombardment. The gas is pumped into the tube, then vacuum-sealed and electrodes are welded onto either end with wires that can conduct the current from a transformer.

The final touch should be applying block-out paint between letters and on the areas of the glass tube that go inside the housing.



Electrode welded to the end of the tube.



Block-out paint should be applied to define letter forms and tube ends. Eventually this paint will peel off and should be reapplied.

Ne Ar Kr Xe He

Neon, argon, krypton, xenon, and helium are all noble gases that can be used to create these colors in clear glass tubes. Coated and colorful tubes increase the color range.



Top photo: Al Barna 2011, Tower Records, Sacramento, CA
Illustration of noble gases courtesy of Pslawinski, via Wikipedia

Detail photos: Al Barna 2017, Neon Works color board in Oakland, CA
and Stephen's Meat Products, San Jose, CA

TUBE COLORS

Q: What creates the different colors in a neon sign? Some tubes are clear and others are white. Are LED colors the same as neon colors?

A: There are five noble gases used to create illuminating color in glass tubes: neon, argon, krypton, xenon, and helium. It is common to refer to all tube lighting simply as neon, the Greek word for new.

Clear tubes are usually filled with either neon or argon gas. Neon gas glows the familiar red-orange color and shines brighter than other gases. Argon gas with a drop of mercury glows a brighter blue color. The tubes that look white in daylight are phosphor-coated glass tubes, available in a wide array of colors. Some older tubes may show dark spots. These spots are mercury stains, all stained tubes should be replaced.

Colored glass tubes are imported and more expensive than other tubes, like the Novial Gold glass used on the dancing pig of San Jose (photo right). Before the mid 1930s, most neon signs used clear tubes pumped with either neon or argon gas. The wide array of colored tubes came later. Try to keep and match the original vintage glass tubes, unless color matching is a problem.

Never use LEDs that are made to resemble neon tubes for they degrade the historical integrity and hand-made artfulness of the sign.



Phosphor-coated glass tubes have a softer glow.



The dancing pig of San Jose uses Novial Gold colored glass tubes.

THE PHENOMENA OF NEON LIGHT

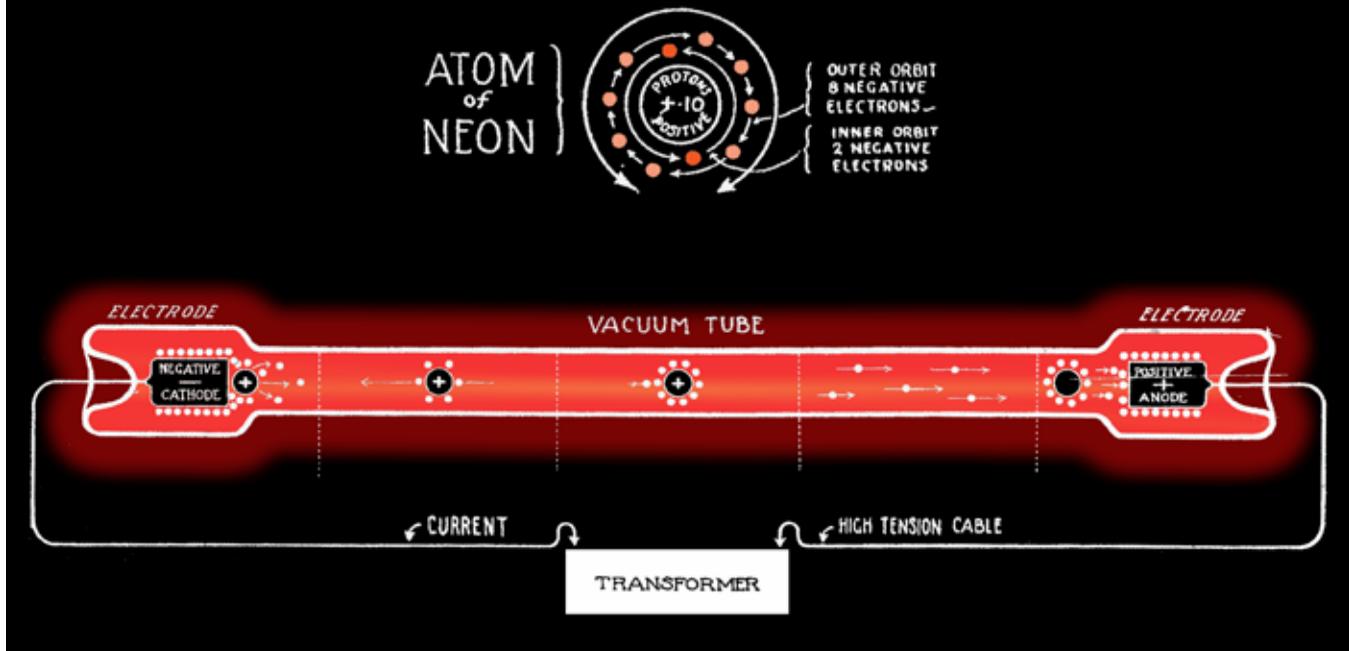


Illustration by Mel Morris Neon Laboratories, 1930, courtesy of Thomas E. Rinaldi, *New York Neon*. Color enhancement by SF Neon.

WIRING & TRANSFORMERS

Q: What causes a neon sign to go dark? Does the electrical wiring in a neon sign pose a fire danger?

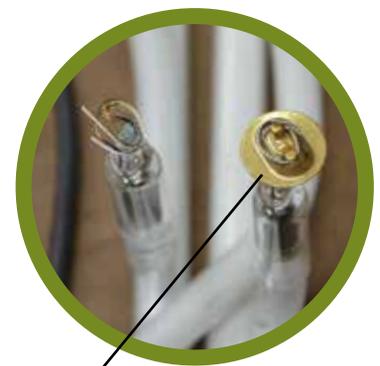
A: Neon signs are as safe as any appliance that is properly wired. The photo at lower right shows exposed wires that present a potential fire hazard. All wires should be encased in protective conduit or inside the metal cabinet.

Have the old connecting wiring inside the sign replaced by an experienced and qualified contractor. The connecting wiring is called GTO wire or GTO cable. It is a high-voltage ignition wire. The acronym stands for gas tube oil. GTO wire is used between the building wiring and the transformer inside the sign, and electrodes on the neon tubes. GTO wire leads should be as short as possible and kept at least three inches apart.

Transformers and electrodes can fail and cause the sign to go dark. A damaged tube can also be a culprit. Replace failed transformers (longer lasting than solid state transformers) specifically rated for outdoor use. It is essential that they be bonded solidly to the sign frame and properly grounded.

Attach a brass electrode button to the end of the electrode. These cost-effective buttons provide increased electrical connection and are corrosion-resistant.

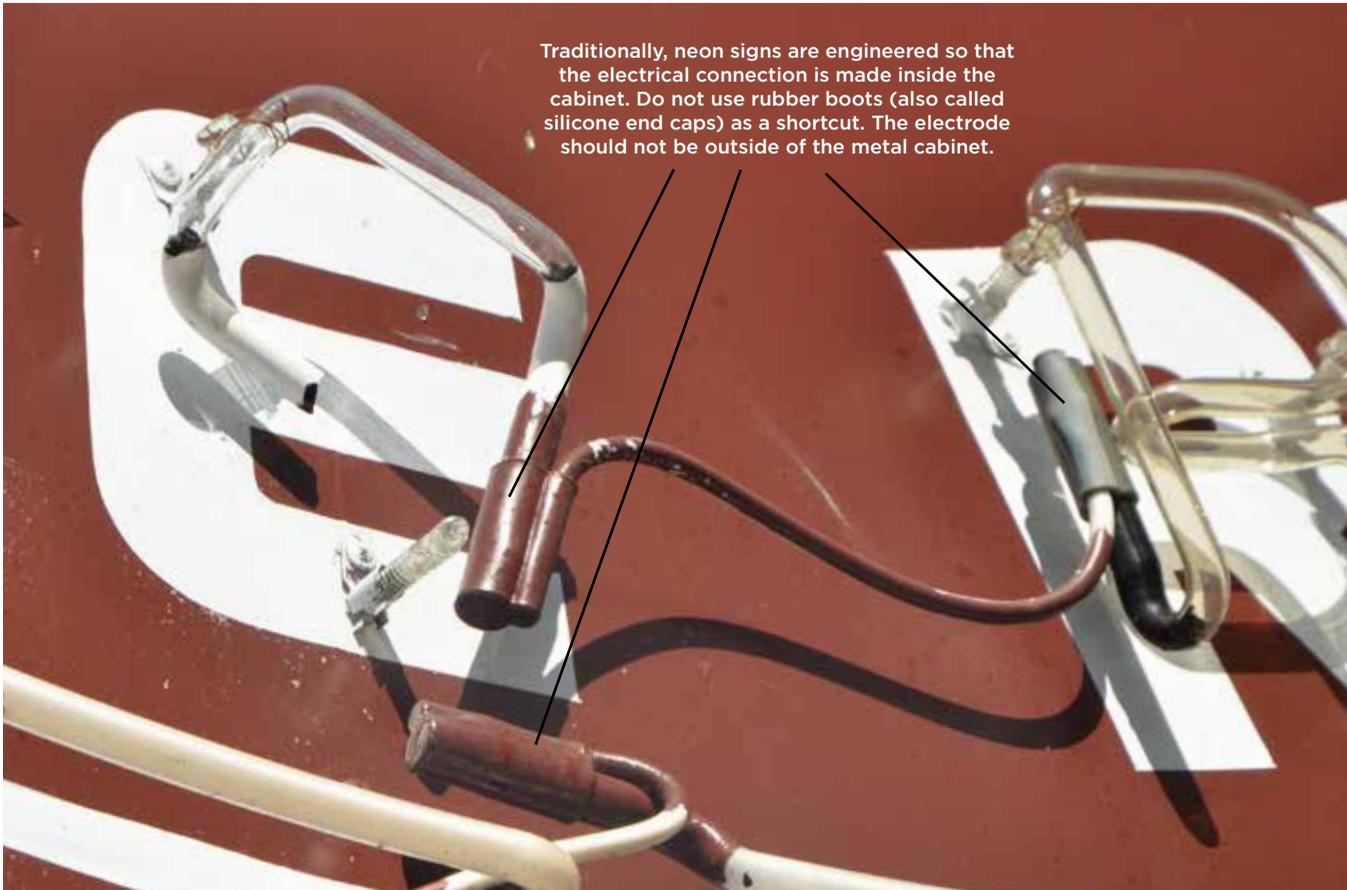
Installation of a service timer and a service switch on the sign may be required, and it is also best practice for safety and energy conservation.



Use brass electrode buttons to increase connectivity.



The exposed wiring outside of this sign cabinet is unsafe and non-compliant.



Traditionally, neon signs are engineered so that the electrical connection is made inside the cabinet. Do not use rubber boots (also called silicone end caps) as a shortcut. The electrode should not be outside of the metal cabinet.

Photo: Al Barna 2018, Lafayette Coffee Shop, San Francisco, CA

Detail photo: Kate Widdows 2017, Crossroads of the World, Los Angeles, CA.

CONNECTIONS & RUBBER BOOTS

Q: What are those cylinders that connect the wire and the glass tube? They are so ugly. Are they a good thing or a bad thing for a neon sign?

A: Most vintage neon signs are engineered using ceramic or glass housings that allow the electrical connections to be made inside the sign cabinet. It is essential to maintain the electrical connections in this original configuration.

Do not use rubber boots (also called silicone end caps) for repairing or re-engineering a neon tube using double-backed electrodes where the connection wire is external to the sign. This degrades the historical integrity of the sign and clutter the visual field of the original sign image.

Rubber boots may be used on rare occasions on some vintage signs, such as free-standing tubes or open panel roof signs. These signs do not have cabinets; the connections were originally made in the open air or with glass end caps. In some cases, one neon tube may be wired to another in series.

For safety, it is important with these kinds of connections that: 1) wires do not come into contact with any other metal part; 2) each wire is as short as possible; and 3) wires do not cross and are spaced at least three inches apart.



Rubber boots and wiring should never be outside of the metal cabinet as a repair shortcut on a vintage sign.

The reason you don't see rubber boots in historical photos of neon signs is that they were not allowed on electric signs until the code changed in the mid-1990s. Some sign contractors use rubber boots to re-engineer a shortcut when repairing neon signs in order to avoid the time and labor of the pattern-making phase.

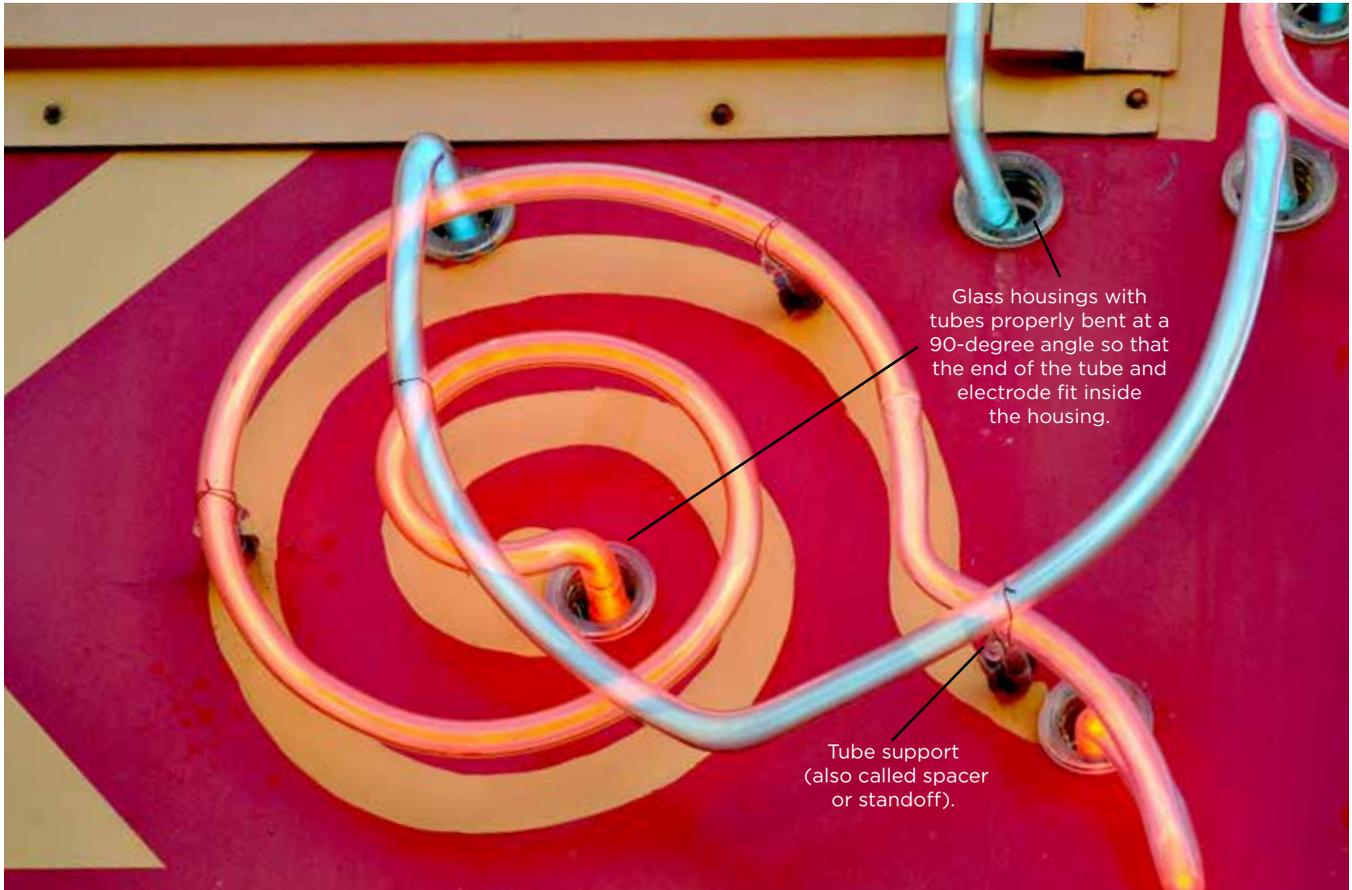


Photo: Randall Ann Homan 2018, Castro Theater, San Francisco, CA

Detail photos: Randall Ann Homan 2017

GLASS HOUSINGS

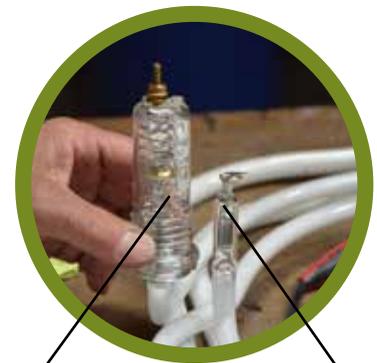
Q: I see holes in the face of the sign—one has a glass tube that fits inside, the other hole just has a wire—which is correct?

A: Traditionally, a porcelain or glass housing fits inside a hole on the face of the sign and serves as an insulator to the glass tube. Housings are essential and contain a spring to ensure a tight connection to the electrode. Never re-engineer or repair a sign so the electrode or wire is outside of the housing, exposed to the elements.

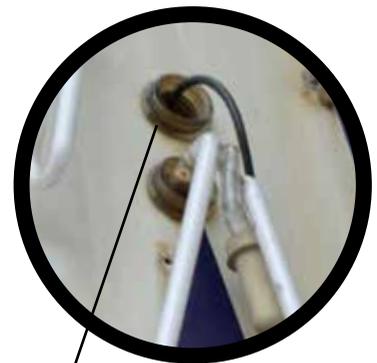
Tubes should always be bent at a 90-degree angle to precisely fit inside the original housing holes. So, if your pattern is off even a quarter of an inch, the glass tube might not fit, and there is no choice but to rebend the glass tubes. An accurate pattern is crucial.

Replace glass housings in all original housing holes. Never drill new holes. Use original holes even if the sign is redesigned. Do not be tempted by shortcuts, such as drilling a new hole for a bushing (non-traditional housing that is smaller in diameter).

Replace all original tube supports (also called spacers or standoffs) that are missing or broken. Tube supports are mounted on the sign and wired to the glass tubes to hold the tubes in place, away from the face of the sign. Use glass tube supports and stainless-steel screws that are rust resistant



Glass housing with spring fits over the glass tube end with electrode.



Never run wire from the exposed electrode into a hole/glass housing.



Photos: Al Barna 2011, Lazo's Pool Hall, Bakersfield, CA

METAL CABINETS & PIGEONS

Q: The little doors are missing at the bottom of the sign, there are large rusty holes, and pigeons live there. Can these problems be fixed?

A: The “doors” on a sign cabinet are called access panels. These panels are very important for access to the inner wiring and transformers. These panels should remain sealed until they are opened for maintenance or repair.

Whenever you see a missing or unsealed access panel, it is an irresistible invitation for birds to nest inside the sign. Unfortunately, pigeon guano is extremely damaging to a sign's sheet metal, electrical transformers, transformer shelves and wiring. Pigeon abatement can be a toxic, challenging, and time-consuming process that should be done by professionals with personal protective equipment (PPE).

Pigeons roosting in a neon sign cabinet can also be electrocuted when the sign is turned on. It is very important to keep access panels sealed to avoid pigeon damage and grisly scenarios. Make sure your bid includes bird-control products and deterrents to keep birds away from the sign.

Weep holes should be cleared, they let water drain instead of pooling up in the bottom of the sign. If the bottom of the signs has completely deteriorated, the cabinet should be repaired with new metal. In most cases the sign should be removed for this kind of repair.



Even a badly rusted sign can still light up, an exposed transformer will eventually fail.



Exposed wire is unsafe. Unsealed access panel invites pigeons to nest. Bird guano will accelerate damage the metal cabinet.



Photo: Al Barna 2018, White Stag Sign, Portland, OR

Detail photo: Al Barna 2016, Chris' & Pitt's BAR-B-Q sign, collection of the Museum of Neon Art, Glendale, CA

ANIMATED SIGNS & LED BULBS

Q: What about the animated neon signs with flashing bulbs?
Should incandescent bulbs or neon tubes be replaced with LEDs?

A: Animated signs are controlled by a mechanical unit, sometimes called a sequencer unit, inside the cabinet. A sequencer basically turns the electrical contacts on and off to different parts of the sign in sequence. A damaged unit can be repaired or rebuilt. Original units should be saved, they hold clues to the timing and sequence of the sign's original animation design.

Incandescent bulbs that flash in sequence are a brilliant addition to a neon sign. But, they are energy vampires. Governments around the world have passed measures to phase out incandescent light bulbs to be replaced by energy-efficient LED bulbs. These measures will

soon serve as a ban on the future manufacturing of incandescent light bulbs. LED bulbs are much more energy efficient than incandescent bulbs. The ban on incandescent bulbs may soon leave no choice but to use new LED bulbs on vintage signs.

Neon signs have suffered from comparisons with incandescent bulbs as a significant drain on the electricity grid. But a neon sign consumes much less power relative to the brightness of the light it emits. A neon tube uses cold cathode technology. It is not heated by a filament, increasing its energy efficiency and longevity compared to an incandescent bulb.



Flashing bulbs on neon signs add motion and brilliance. Incandescent bulbs use much more energy than neon tubes or LED bulbs.

LEDs should never be substituted for neon glass tube lighting. It's just, well, wrong. LEDs don't have the same ambient glow or color range as neon signs. Neon glass tubes and metal cabinets can last for decades and are recyclable.

New LED "faux neon" tubes are often touted as a better option by manufacturers. But in a few years they become e-waste and cannot match the aesthetic of neon light.

Vintage Sign Survey, Continental US, 2018.

The vintage signs in this survey were built between 1920-1969. Of the 5,000+ signs surveyed, 20% are in California, 8% are in Texas, 6% are in Illinois, etc.



Source: 2018 Survey, RoadsideArchitecture.com

Detail photo: Al Barna 2016, Katz's Delicatessen, New York, NY

SIGN SURVEYS

Q: Should I document neon signs in my area? Does anyone document signs nationwide? Which state has the most neon signs?

A: Old signs disappear every year at an alarming rate. Debra Jane Seltzer is a tireless historian who travels coast-to-coast documenting vintage buildings, signs, and statues built between 1920-1969.

Debra Jane's image-rich website, RoadsideArchitecture.com, is a deep dive into the documentation of neon signs. She compiled data from her website for the 2018 Neon Speaks Symposium. The results outlined how many vintage signs remain in each state and how many have been lost in the past eighteen years. California has more vintage signs than any other state (1000+).

More land mass, larger population, and milder climate means more surviving signs. Texas has 444+ signs, less than half the amount as California. Illinois has 300+ signs. Washington, Missouri, Nevada, New Mexico, and Michigan each have about 200 signs still in place.

It is fascinating that each state has its own cache of surviving signs. The map on this page shows the estimated percentage of all the surviving vintage signs from the 2018 survey by Debra Jane. But she can't be everywhere in the US at once, and signs are being refaced or removed at a rapid rate.



We encourage you to photograph, document, and create a searchable online record for signs that have historic importance in your community, city, and state.

Every state needs a community campaign for its neon signs to be restored and preserved for future generations. What better way to celebrate the legacy of this unique art form, local culture, and mom and pop businesses?

SUCCESS STORIES



NEON DIVERS

The Starlite Motel sign in Mesa, AZ, debuted in 1960. Designed by Stanley Russon and fabricated by master sign maker Paul Millett.

The sign was damaged in a storm in 2010. It crashed to the ground into crumpled metal and shattered tubes. The community rallied and raised funds to restore this iconic neon sign and all three diving ladies.

Restoration was completed in 2013 by Larry and Lee Graham of Graham's Neon in Mesa, AZ with the support of the Mesa Preservation Foundation.

TOWER FURNITURE

Tod Swarmstedt, the director of the American Sign Museum, used the Tower Furniture sign as a master class in porcelain sign restoration. The restoration project began by taking down the sign in order to rebuild it. Tod knew the structural integrity of the sign was questionable, judging by the ability to peer up into the sign through the rotted-out bottom. A new steel structure and cabinet sections were spliced in to add support. The thin angle iron support was replaced with a stronger tubular metal support. Then these elements were sanded and primed with a rust-prohibitive primer. The rusted areas in the porcelain were cleaned, buffed, and clear-coated with a high-solid urethane. The rusted areas in the porcelain were cleaned, buffed, and clear-coated with a high-solid urethane. The clear tubes were crafted and pumped with pure neon to match the original color. The wiring and tubes were tested in the shop (bottom photo) before the sign was reassembled and eventually placed back on its perch above Main Street in Cincinnati, OH.



Photos courtesy of the American Sign Museum, Cincinnati, OH

THE AVENUE THEATER

This San Francisco theater was built in 1927 and closed in 1984. The sign and marquee became a hotel for pigeons until 2017. Then the San Francisco Office of Employment and Workforce Development and the SF Shines program provided a grant for a restoration of the exterior of the facade, neon sign and marquee. The restoration project of this neighborhood gem was spearheaded by Luke Spray of the Portola Neighborhood Association. The neon restoration was done by Jim Rizzo and his team at Neon Works, Oakland, CA. Amy Palms, Libby Cahill, and Dan Kuppe did the tube bending. Greg King did the historical detective work and devised a strategy to recreate the sign's original mechanisms for the flashing animation. The new neon glow has helped to revitalize the neighborhood and has attracted storefront tenants to this long-empty building. For the re-lighting ceremony, the late San Francisco Mayor, Ed Lee, led the countdown to flip the switch at twilight. It was a community celebration attended by hundreds of neighbors, complete with live music and free popcorn.



Photo: Luke Spray 2016, San Francisco, CA



Photo: Randall Ann Homan 2017, Avenue Theater, San Francisco, CA
L-R, Jim Rizzo and Nate Macie putting the final touches on the marquee.



Photo: Al Barna 2017, San Francisco, CA

MOZART LOUNGE

Corky Scholl was driving home from work when he saw that one of his favorite landmark signs in Denver, CO—the Mozart Lounge—had lost its neon tubes and was repainted as the Aqua Lounge. He rushed home and started a Facebook page called Save the Signs. The page quickly gained followers and it became immediately clear that there were others who shared Corky’s enthusiasm for preserving Denver’s neon signs.

Fast forward six years, and the Save the Signs Facebook page now has over 12,000 followers (SaveTheSignsOnColfax). New owners decided to go back to the original name on the sign and contacted Corky to find the best sign shop to restore the Mozart Lounge sign to its former brilliance. The glowing restoration below was done by Seth Totten at Acme Neon in Denver, CO.



Photo: Corky Scholl 2017, when the neon tubes were removed and the sign was redesigned as the Aqua Lounge.



Historical photo of the Mozart Lounge, Denver, CO 1972
Courtesy of Corky Scholl, personal collection



Photo: Corky Scholl 2017, Mozart Lounge restored to its former brilliance, Denver CO



Photo: Corky Scholl 2017, sign being restored, old lettering revealed.

THE BROWN DERBY

The Brown Derby sign is a favorite of Eric Lynxwiler, tour guide and board member of the Museum of Neon Art (MONA) in Glendale, CA. This iconic derby hat was a fixture on Hollywood Boulevard and Vine Street for more than fifty years. When the famed eatery closed in 1985, the neon derby hat sign was acquired by a private collector and eventually donated to MONA. A majority restoration of the Brown Derby preceded a relighting ceremony in MONA's main gallery. Historical photos indicate the sign was originally illuminated with red neon and blue argon, but the sign was updated to a white outline with gold lettering in the 1950s. Color schemes may change with time when a sign has served for many decades.



Photos courtesy of Larry Lytle 2016, Brown Derby in Museum of Neon Art, Glendale, CA



Historical photo of the Brown Derby restaurant, Los Angeles, CA, circa 1940. Courtesy of J. Eric Lynxwiler, personal collection

LESSONS LEARNED

Each surviving neon sign comes with a fascinating story and a lesson learned. When neon signs are removed or refaced instead of saved and restored, our collective history is erased. In every state, neon signs are being removed or refaced at a rapid pace.

MAPES HOTEL

These cowboys formed the letter M on the marquee of the Mapes Hotel in Reno, NV. The hotel was imploded in 2000, despite a vigorous campaign to save it.

Will Durham of the Nevada Neon Project was determined not to let the neon cowboys be buried in the dust. He worked diligently to preserve them, along with Reno's bounty of discarded porcelain neon signs. Will takes every opportunity to exhibit this collection of signs and keep them in the public eye. Eventually, these neon cowboys will be on permanent display because a neon museum is in the works. More at NevadaNeonProject.com





Photo: Al Barna 2011, Ginn Wall Hardware, San Francisco, CA

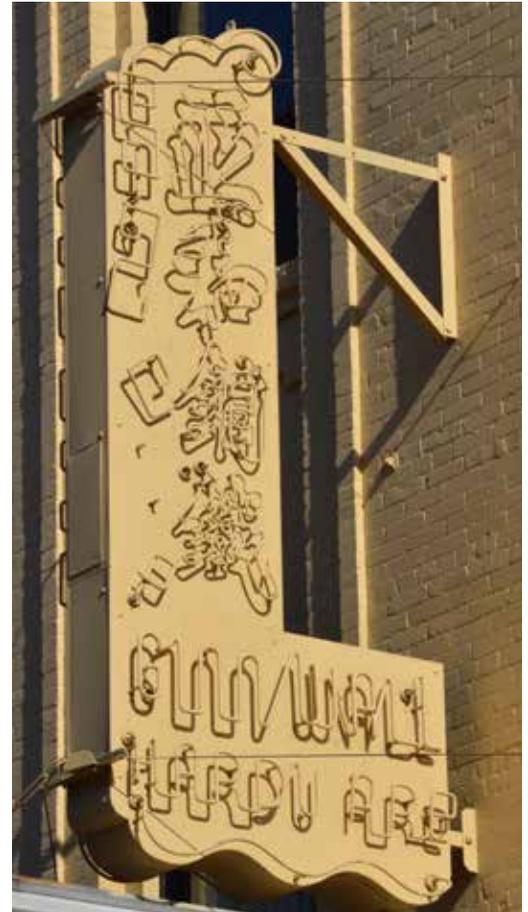


Photo: Al Barna 2015, Ginn Wall Hardware, San Francisco, CA

A Chinese cook at Angel Island [immigration station] often delivered coaching papers and mail that detainees' relatives left at the hardware store, hiding them under lids of teapot warmers and passing them on to their intended recipients at meal time...

—Memories of Gwing Der, San Francisco, CA
by Nancy F. Fong, Dorothy Fong, and Sandra Tye,
www.aiisf.org

GINN WALL HARDWARE

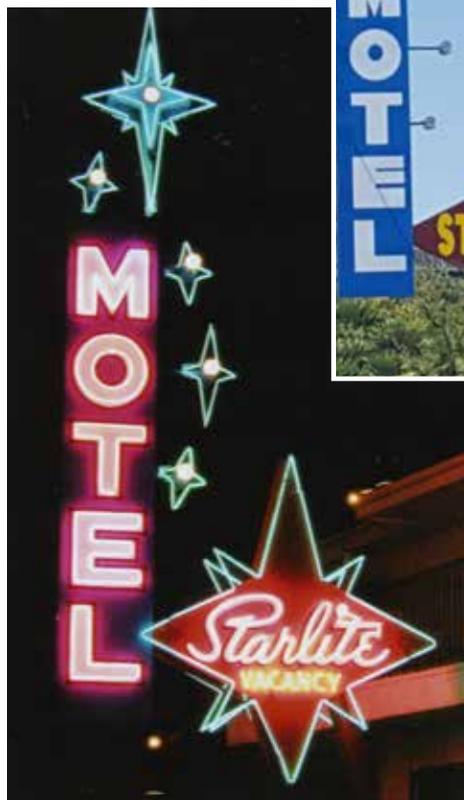
The patina of peeling paint and rust on a neon sign shows the layers of weather and time. This uneven coloring can sometimes be much more complex and beautiful than the original color scheme. Often old signs are painted the same color as the building to try and make them invisible, such as this one. Even the glass tubes were painted over on the Ginn Wall Hardware sign on Grant Avenue in San Francisco's Chinatown. But this sign still reminds us of a unique story of a community business and families fighting against immigration discrimination. The Ginn Wall Hardware served as an underground post office. In the hardware store, families dropped letters to their loved ones who were detained at the Angel Island immigration station as they waited to enter the United States.

STARLITE MOTEL

Signs reflect a time and place, such as the Starlite Motel in the City of North Las Vegas, NV. The Las Vegas Neon Museum has been tracking the changes to this sign over the years. The star motif of the original sign (left) reflects the excitement and fascination of the space age of the 1960s. This exuberance was obliterated by removing the glass tubes and elegant script letter forms of the word Starlite. The redesign severely degraded the historical integrity of the sign. In 2018, the owner decided to reinstall some of the neon stars and lettering (right).

TRAVELER'S REST MOTEL

When World War II was over and blackouts ended, there was an eager demand for neon signs for both big businesses and mom and pop shops. Main streets were layered with competing illuminated signs. Even owners of modest enterprises could see their business name up in lights. The Traveler's Rest Motel glowed nightly in San Jose, CA, until it suffered a misguided redesign with dull wooden block letters. But it can be difficult to convince an owner that it is worth the investment to restore a neon sign and that it can increase patronage of new and return customers.



Photos: Starlite Motel, City of North Las Vegas, NV.
Left: Jeffery Cook Collection/Neon Museum 2005.
Center: Maggie Zackri 2017. Right: Neon Museum 2018.



Photo: Debra Jane Seltzer 2017,
Traveler's Rest Motel, San Jose, CA

Photo: Al Barna 2014, Traveler's Rest Motel, San Jose, CA

EASTERN BAKERY

The Eastern Bakery in the heart of San Francisco's Chinatown is the oldest bakery on historic Grant Avenue. In 2017, the sign was resurfaced to look like a brand-new plastic sign. All the authenticity was lost in the design and letter forms; only the Coca-Cola button still looks authentic. The good news/bad news is that this remake was just a case of miscommunication and the sign was quickly retrofitted with neon glass tubes. But the plastic letter channels remain.

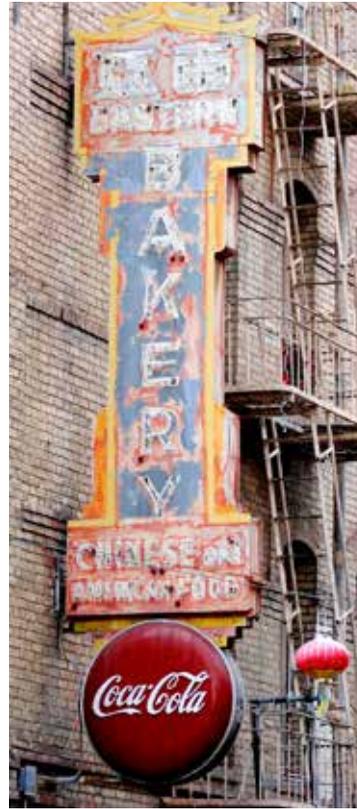


Photo: Al Barna 2014, Eastern Bakery, San Francisco, CA



Photo: Al Barna 2017, Eastern Bakery, San Francisco, CA

CHINESE VILLAGE

This towering pole sign with flashing stars stood tall for more than fifty years beside one of Portland, Oregon's oldest Chinese restaurants. Soon after the establishment closed, two locals, Kate Widdows (electricletterland.com), and Michael Mintz (neongods.com), noticed that the restaurant was being torn down and they sprang into action. Many phone calls later, the demolition company agreed to let them have the sign for free; and with help from the National Neon Museum in The Dalles, Oregon, a crane was hired, and a warehouse space secured for the temporary storage of the sign. Restoration and a permanent home for the sign are puzzles that are still to be solved. But the sign is safe for the time being while the team searches for a landing spot for this star-studded neon beauty.



Photo: Harvey Long 2018, Chinese Village sign stored in a warehouse in Troutdale, OR. L-R: Randall Ann Homan, Kate Widdows, Al Barna, and Michael Mintz.



Photo: Debra Jane Seltzer 2015 Chinese Village at night, Portland, OR

Photo: Randall Ann Homan 2018 Box of Chinese Village neon stars.



NEON SIGN TREATMENT PLAN

BY LANNETTE SCHWARTZ, MHC

A treatment plan is a vital road map and inventory for your neon sign restoration project. You can create one by yourself or with help from sign preservation groups (see Support Contacts on page 38). City planners and conservationists rely heavily on physical evidence such as photographs, news articles, and city records to piece together a history that can articulate the level of integrity of a storefront or sign. Reversibility is a key concept in conservation. This concept is applied to changes in technology relating to historical signs, and it is critical to understand the implications of any irreversible changes when developing a treatment plan.

Use the list below as an outline to create your own treatment plan for your neon sign project. A treatment plan will provide all the details needed by a city office, funding agency, grant program, or historical society that is interested in helping to save the sign.

1. Determine if neon sign is designated by the city as “historic” or, if you plan to nominate the sign to take advantage of any available building code exemptions, or financial incentives available to historic resources in that particular location. Include the historic status and any associated codes given by city planners.
2. Document existing elevation, and/or attach a color daytime photo showing elevation of neon sign. If any portion of the sign illuminates, also attach a night photo. Include the date, time, and view direction, and photographer’s name.
3. Describe the age, construction, materials, and types of illumination.
4. Estimate total lumens for the sign. A lumen is a unit of light output, per watt. Typically, a neon sign has a consumption of about 4 watts per foot of glass tubing. 4 feet of tube x 4 watts = 16 lumens.
5. Provide a site plan with location of sign.
6. Obtain and document the GPS coordinates of the existing location.
7. Attach photographs of existing site conditions with both site context and material detail photos.
8. Develop a narrative describing each of the technical, cultural, historical, and design elements and their level of integrity. You can enlist a qualified architectural historian or preservation consultant to help you with this. Also list the sign’s character-defining features.
9. Compile a schedule of past and future periodic inspections to assess existing conditions. Provide comments that indicate if the repair is either preventive, expected, or required immediately for safety by an experienced neon sign shop. Items to include in the schedule are elements in the Neon Best Practices Checklist on page three of this guidebook, such as cleaning, pigeon and rust abatement, support structure, glass tubing and housings, transformers, electrical wiring, paint, etc. Attach invoice copies or photos from material catalogs for easy reference.
10. Provide documentation of the sign’s historical authenticity, such as proof of age, materials, location via permits, dated photographs, site plans, and elevation drawings).
11. Describe the number and location of transformers and mechanical sequencing units and current daily timer schedule of illumination.
12. Describe any proposed repair, restoration, redesign, relocation, or replication (may include a combination of treatments).
13. List parts and materials to be replaced and any change in design or elevation. Confirm that the original wiring configuration will be the same and that original parts will be saved for future study or replication if needed.
14. Determine if any repairs or changes are considered to be irreversible. If so, or if uncertain, consider reviewing the proposed changes with either a qualified preservation consultant or your City’s preservation department prior to making any of these types of changes. You will likely need to adhere to the National Park Service (NPS) Secretary of the Interior’s Standards to maintain a historic status. This review should be included in your treatment plan.
15. Provide a narrative describing plans for maintenance and repair of the sign in the future based on inspections. All neon signs need repainting and new transformers when needed, typically every six to ten years.
16. Develop a schedule of maintenance and determine a budget for each line item using the inspection results described above. Update this schedule annually with any completed repairs or change in repair costs. Include a line item to take updated photos of existing conditions.
17. If you plan to relocate the sign at some point in the future, provide the destination’s GPS coordinates, site plan, and photo of proposed site.



Photo: Lannette Schwartz 2017, Broadway Hollywood building roof sign, Los Angeles, CA

Lannette Schwartz is a preservation consultant with a focus on conserving historic signs. Armed with a master’s degree in Heritage Conservation from USC, and a decade of historic preservation advocacy work, she has launched several successful sign conservation projects in Hollywood, CA. Lannette is currently the Sign Committee Chair for the Broadway Hollywood Building and is an active public speaker on citywide historic sign programs. historicsignconservation.com



RESOURCES

STANDARDS, ORDINANCES, AND FUNDRAISING

CONSERVATION STANDARDS AND REFERENCES

The term “conservation” is defined by the National Park Service. It is important to draw a distinction between a narrow definition of the term “preservation” which is limited to sustaining the existing form, integrity, and materials of historic signs, and “conservation” as a broader term, defined by the National Park Service, Secretary of the Interior’s Standards and Guidelines Preservation Terminology, to include the preservation, reconstruction, rehabilitation (adaptive reuse), and restoration as the different approaches to the treatment of historic signs. There are defined and prescribed standards and guidelines for each treatment approach. For more information, please visit: www.nps.gov/tps/standards.htm.

In some public policy sign ordinances, the word “neon” sign does not appear as a sign type, but you would look to the description of neon materials, for example a sign may be described as an open panel roof sign, with channel letters, graphic segments, and open neon lighting. Also, “reversibility” is a key concept in conservation. This concept is applied to changes in technology relating to historic signs, and it is critical to understand the implications of any irreversible changes when developing a treatment plan.¹

The treatment, repair, rehabilitation, and maintenance of historic signs, like historic buildings generally, rely on the National Park Service, Secretary of Interior’s Standards (Standards) for guidance. These Standards are often defined and referenced in a city’s municipal code in part due to the codification of individual city ordinances. The National Park Service (NPS) has compiled a series of Preservation Briefs that provide more specific guidance for conservationists. Specifically, the 1991 Preservation Brief No. 25 on the Preservation of historic signs includes broad information on historic sign types and practices; sign regulation; preserving historic signs; new signs and historic buildings; references; and a reading list.

- United States National Park Service, Archeology and Historic Preservation, Secretary of the Interior’s Standards and Guidelines, Preservation Terminology, nps.gov/history/local-law/arch_stnds_10.htm.
- NPS Treatment Standards: www.nps.gov/tps/standards/four-treatments/standguide/overview/using_standguide
- NPS Preservation Brief 25: The Preservation of Historic Signs (including neon) www.nps.gov/tps/how-to-prepare/briefs/25-signs.htm

Qualified historic signs in California can also benefit from the California Historic Building and Safety Code (CHBC) for repairs and rehabilitation under the considerations for repairs, maintenance, and restoration of historic signs.

¹Barbara Appelbaum, “Criteria for Treatment: Reversibility,” *Journal of the American Institute for Conservation*, 26 (2). [Maney Publishing, American Institute for Conservation of Historic & Artistic Works] (1987): 65–73, accessed April 2015, JSTOR doi:10.2307/3179456.

If the prospect of saving a neon sign feels complicated or overwhelming, don’t hesitate to contact anyone on the support list on page 38. Or contact a professional preservationist or architectural historian in your area, they will probably be interested in assisting your neon project.

—Lannette Schwartz, MHC

FUNDRAISING AND GRANTS

Local preservation or conservation organizations may also offer programs to assist in restoration. Once you have raised funds toward saving a neon sign, you can apply to a matching grant program from the National Trust for Historic Preservation. www.forum.savingplaces.org/build/funding/grant-seekers/preservation-funds

CITY ORDINANCES TO PROTECT VINTAGE SIGNS

Check with local city planning or small business agencies to determine what program(s) are available to assist with the restoration of neon signs.

A great example is the Vintage Sign Ordinance and the SF Shines grant program of the City and County of San Francisco. This ordinance allowed for the relocation of the Doc’s Clock neon sign when the business had to relocate. The new storefront was narrower, so the sign was bent at right angles to fit the smaller facade. This was a creative alternative to losing the sign forever.



Photos: Top, Al Barna 2014. Bottom, Randall Ann Homan 2018, San Francisco, CA



To read samples of other city ordinances for vintage signs, and to download any updates to this guide, go to neonspeaks.org



RESOURCES

CONTACTS, BOOKS, AND FURTHER READING

SUPPORT CONTACTS

Contact any of the sign preservationists from the list below. We all support each other's sign projects as an informal network for a national movement to save old signs. Reach out for information about media connections, working with local governments, advice on fundraising campaigns, and recommendations for the best sign shop to restore your neon sign.

American Sign Museum: Tod Swormstedt, Cincinnati, OH, (sign shop connections nationwide) Find resources at Save Our Signs webpage at americansignmuseum.org or email info@americansignmuseum.org

Ignite Sign Art Museum: Jude and Monica Cook, Tucson, AZ, IgniteMuseum.com

Museum of Neon Art (MONA): Kim Koga and Eric Lynxwiler, Glendale, CA, info@neonmona.org

Nevada Neon Project: Will Durham, Reno, NV willdurhamnv@gmail.com

New Mexico Route 66 Association: Johnnie Meier, Embudo, NM, johnniev@roadsideculture.com

RoadsideArchitecture.com: Debra Jane Seltzer, Ventura, CA, (sign shop connections nationwide) roadarch@outlook.com

Route 66 Association of Missouri: Robert Gehl, Wildwood, MO, rgehl66@earthlink.net

Sacramento Modern: Gretchen Steinberg, Sacramento, CA, gretchen@sacmod.org

San Francisco Neon: Al Barna and Randall Ann Homan, San Francisco and Bay Area, CA, sfneonbook@gmail.com

San Jose Signs Project: Heather David, San Jose, CA, Facebook: San Jose Signs Project

Save the Signs: Corky Scholl, Denver CO, Facebook: Save the Signs on Colfax

FURTHER READING FOR NEON RESTORATION TECHNIQUES

- Neon Techniques*, Samuel Miller and Wayne Strattman, 1997
- Steps to Take in the Restoration of Vintage Electric, Illuminated Signs*, Museum of Neon Art, PDF file available by request: info@neonmona.org

NEON BOOKS: HISTORY, CITIES, STATES, AND COUNTRIES

- American Signs: Form and Meaning on Route 66*, Lisa Mahar, 2002
- Flickering Light: A History of Neon*, Christoph Ribbat, 2013
- Good Old Neon: Signs You're In Chicago*, Nick Freeman, 2014
- Let There Be Neon*, Rudi Stern, 1979, 1988, 1996
- Los Angeles Neon*, Nathan Marsak and Nigel Cox, 2002
- Motel California*, Heather M. David, 2017
- Neon Boneyard: Las Vegas A-Z*, Judy Natal and Johanna Drucker, 2006
- Neon Nevada*, Peter Laufer and Sheila Swan Laufer, 2011
- Neon Revolution*, Eastern Bloc Electro-Graphic Design, Ilona Karwinska, 2017
- Neon Warsaw*, Ilona Karwinska, 2015
- New England Neon*, Susan Mara Bregman, 2018
- New York Neon*, Thomas E. Rinaldi, 2012
- New York Nights*, James and Karla Murray, 2012
- Polish Cold War Neon*, Ilona Karwinska, 2011
- Signs of Life: Los Angeles Is the City of Neon*, J. Eric Lynxwiler and Christina Rice, 2016
- San Francisco Neon: Survivors and Lost Icons*, Al Barna and Randall Ann Homan, 2014
- San Jose Signs Project Guide*, Heather David, 2016
- Signs, Streets, and Storefronts: A History of Architecture and Graphics along America's Commercial Corridors*, Martin Treu, 2012
- Spectacular Illumination: Neon Los Angeles, 1925-1965*, Tom Zimmerman and J. Eric Lynxwiler, 2018
- The Magic Sign: The Electric Art/Architecture of Las Vegas*, Charles Barnard, 1993
- The Neon Files: Art and Design of Historic Route 66 Signs*, Mark C. Childs and Ellen D. Babcock, 2016
- Vanishing Vernacular: Western Landmarks*, Steve Fitch, 2018
- Vintage Neon*, Len Davidson, 1999
- Vintage Signs of America*, Debra Jane Seltzer, 2018



AFTERWORD

BY KATE WIDDOWS

Cities and towns emerge from the depths of history as messy conglomerations of commerce, community, open space, noise, and movement. Within a landscape of density, cultural artifacts live and die by chance or by choice. Somehow eluding the demolition crews of progress, scores of neon signs that have outlasted their owner's entrepreneurial spirit now sit, hanging in the shadows, gathering dust, already deemed worthless by the future of the airspace they occupy.

Once prized for their unrivaled intensity and longevity, these glowing cultural signifiers are cherished mostly in the subconscious. We rely on them to identify our surroundings; regard them as neighborhood fixtures; expect them to remain forever, frozen in time; and react with shock when they disappear.

Great signs disappear every day, but with a little help, surviving neon signs can endure. Independent business owners, typically the gatekeepers of these treasures, dutifully keep these beauties lit if they have the means. When times are tough, signs often fall into disrepair and stay dark for years. But these neon stewards need not struggle in a vacuum. If you cherish a store's sign, don't be shy about it: making contact, expressing appreciation, and supporting the business can have a positive impact on the fate of a sign.

In neon's heyday, signs were affordable, simple, and essential to business, achieving the most readable form of advertising in nighttime landscapes. The design styles of neon's post-WWII peak must have seemed so commonplace at the time, as busy neon shops swamped with sign orders cranked out naked capitals and curvy scripts every day. But today these signs have a special allure, evoking mystery, romance, excitement. And we wake up to realize that these sign makers were artists, pushing the creative limits of a captivating new medium. Their creations are one-of-a-kind relics, meant to be re-lit again and again, punctuating our cities with that distinctive glow, for future generations to gaze at in wonder and delight.

You're invited to join us at the next Neon Speaks event, where neon powers the growing movement to protect these irreplaceable works of art from extinction.

Kate Widdows is a graphic designer specializing in lettering, type design, and neon. She's designed neon signs for bars, movie theaters, and art exhibitions. Her original animated neon GIFs have appeared in news articles and television pilots, and have been exhibited internationally at design festivals, art galleries, and parties. Kate is assistant producer of the Neon Speaks Festival & Symposium in San Francisco, and leads neon walking tours in her home city of Portland, OR. electricletterland.com



NEONSPEAKS.ORG



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This 1950s view of Kearny Street in San Francisco shows dozens of neon signs that have since vanished.

Photo: SFMTA.org/photo